

# THE AUTOMOBILE

## PARIS SALON IS NOW IN SUCCESSFUL PROGRESS

By W. F. BRADLEY.

PARIS, Nov. 28.—With the usual ceremonial, President Fallieres and his suite drove from the Elysee to the Grand Palais in an automobile, were received by a bowing group of automobile constructors responsible for the exhibition, declared the show open, and spent a couple of hours paying compliments in his hurried visit from stand to stand. It is a morning's formality that must be gone through as religiously as the morning devotion of the most pious Mohammedan, and serves to mark out the Salon from any of the common groups of exhibitions where horses or furniture or bric-à-brac are the center of attraction, and here in France precedent is much observed.

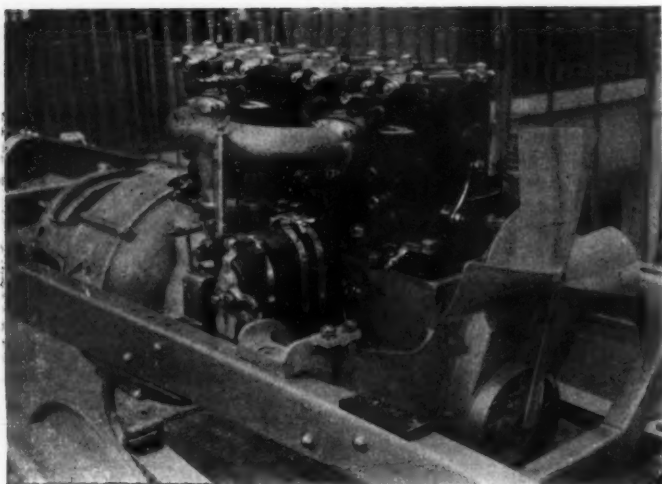
Nothing has been changed in the general lines of the exhibition, and to the newcomer it stands forth as a show of remarkable elegance and artistic design; but those who have followed up the increase of decoration, gold paint, flowers and pile carpets, at

once miss that flood of electric light and that wealth of decoration that in previous years had caused the unsophisticated lady visitor to ask why they wanted cars there at all when there were so many other pretty things to be seen. Last year it was a gorgeous hall of electricity; this year it is an artistic automobile show. And it is expected that as much business will be done with a good deal less expense to those trying to do the business. Decorated stands are not essential now in selling cars.

There are nearly seven hundred exhibitors in the large hall on the banks of the Seine, which is a sufficiently high figure to prove that the boycott rumors were nothing more than rumors. The three or four firms that stood out against an annual display have as their only reward the knowledge that nobody misses them. France has more than the lion's share of the show, and naturally takes all the best positions, the locations being made by the



Arrival at the Grand Palais of the Many Exhibits for the Annual Paris Salon.



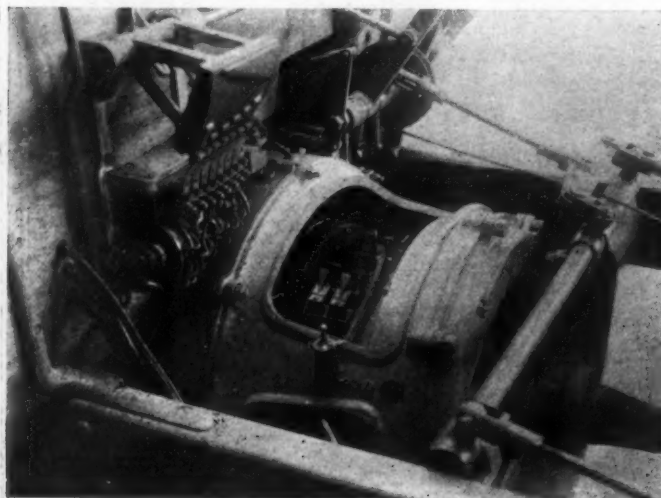
Much-Discussed Knight Engine in Gem Chassis.

drawing of lots with the important feature that only firms of a certain standing can take part in each drawing. The pioneers of the industry get the first positions; those who entered the trade later to make money out of automobiles are given a chance to draw lots according to their business standing. "It would not do to have a general drawing," declare the wise managers, for then some third-rate firm might get the center position and be unable to put up a stand that would harmonize with the decorations of the hall.

But the foreigners have not much reason to grumble at their positions, for near the center of the hall, and round the foot of the grand staircase, are grouped the gorgeous stands of Mercedes, Fiat, Benz, Minerva, Lancia, Wolseley, and Buick. The only other American automobile constructor to hold a position in the Salon is Ford, with a stand less centrally placed. In the gallery, where tires, and a thousand accessories have been given lodging room, Rushmore and Splittorf are the two most important representatives from across the Atlantic. On the opening morning the American visitors observed around the hall were D. J. Post, of Post & Lester, Hartford, Conn; Howard E. Coffin, of the Chalmers-Detroit Company; Emile Crossman, president of the Motor Car Equipment Company; Russell Huff and H. D. Wilson, of the Packard Motor Car Company; and John L. Poole, representing the Buick interests. Those reported on the way are J. D. Maxwell, of the Maxwell-Briscoe Motor Car Company, and Roy Chapin, of the Chalmers-Detroit Company.

#### Nearly Every Builder Has Small Cars.

There are a few points in which the tendency of European design is noticeable from even the cursory examination of an



Generator and Control of Gem Petrol Electric.

opening-day visit. Lower-powered cars are everywhere in favor. With but an exception here and there, every constructor who has made a name in the big car class has gone into the small car field, the idea of a small car varying from a four-cylinder of 85 millimeters bore to a one-lunger of 100 millimeters. Without exception they are shaft-driven; where the cylinders are four in number they are, in nine cases out of ten, cast in a single block, with valves on one side; ignition is invariably by high-tension magneto only; water circulation in most cases is by thermo-syphon, with a tendency to put the radiator on the dash—Renault fashion—when new models have been designed. On clutches and transmission there are a variety of designs; on suspension the prevailing mode is semi-elliptics in front, three-quarter elliptics in the rear, with a good deal of variety in the way of the rear springs are designed.

Low-tension ignition has received its death-blow. During an early morning run through the show not a single example of low-tension make and break could be found. It is true that a few of the cars had not got the covers off, for the President had not arrived and the doors had not been flung open to the public; but even among those hidden up were only a few of the very large models that had the simple low-tension magneto. Among the firms having changed some or all of their models from low to high-tension ignition are Brasier, Dietrich, Mercedes, Mors, Itala, Berliot and Fiat. Double ignition is very rarely seen, and in many cases no provision has been made on the engine for adding a second system as a standby.

#### Departures from Accepted Standards.

There are very few distinct departures from generally accepted standards of design, though of course plenty of diversity in detail methods of working out every part of the car. Air-cooling has one representative only, and even that one is not brought forth as a commercial proposition. The Henriot is an inventor's idea, and has its four cylinders with deep flanges cooled by a couple of fans placed on the right hand side of the engine and driven by bevel gear and upright spindle driven off the camshaft. The transmission is a planetary one contained within the fly-wheel. Another idea of the same firm was the substitution of the radiator by a dashboard tank into which a current of air was forced, circulation being by thermo-syphon.

Charles Y. Knight's patent, as modified by Panhard, Minerva and English Daimler, was undoubtedly the most attractive mechanical feature of the show, without, however, being the one that met with most praise. There are plenty of critics to point out that the engine is difficult to lubricate, that equal silence can be got with a poppet type of valve, and that its good points are obtained at the cost of complication.

Some of the most interesting mechanical work is expected in the aeroplane engine section, which will comprise a portion of the second show to be held in December.

Six-cylinder cars stand just where they were; there are a few new models, but there are some that have disappeared, and there are certain firms having found so little demand for this type of engine that they do not give it standing room this year. Single-cylinders, on the other hand, are being brought forward more and more prominently. In the majority of cases the engine is a De Dion or an Aster fitted to the builder's own chassis, though there are a few cases of large influential firms having produced a "mono," the most important being Bayard-Clement. The aim of the French constructor is to make his one-lunger look like a four-cylinder car, and with this object in view he carries his single vertical cylinder forward under a bonnet that would easily accommodate a four in two castings. In this particular feature the designer has succeeded, for it is impossible to say, from a mere outside examination, whether there are one or four power-producing units. To complete the illusion it is necessary that the exhaust should have the right sound, and though a few have cut down the noise to such an extent that the layman may be deceived, the spaced clap, clap, clap, generally betrays.

The larger firms prefer the two-cylinder model for their small-



est powers, and here are to be found Panhard, Renault, Darracq, Dietrich, Brasier, Charron, Berliet, and Bayard-Clement with two-cylinder vertical engines that in most cases can be run side by side with a four without any but an expert being able to tell, from the noise only, which is which.

#### About the Knight Engine.

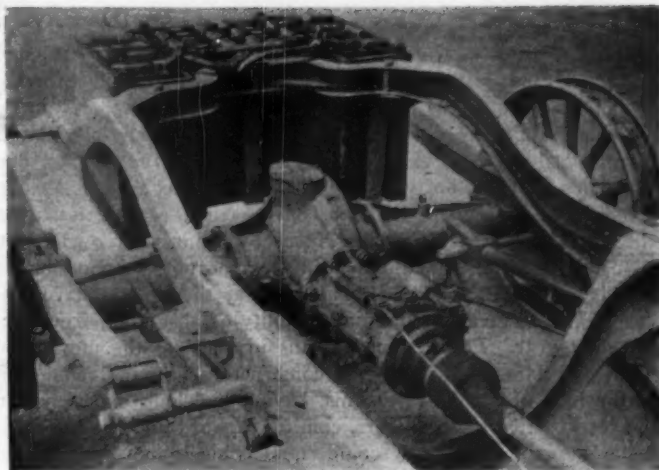
In the short space of three months Charles Y. Knight, of Chicago, has become one of the best-known figures in automobile Europe, and his special motor the most conspicuous feature of the industry. In England, where the motor has been adopted by the Daimler Company, the balance of opinion is that an excellent move has been made by securing the sliding valve engine from the West; but if the opinions were analyzed, it would doubtless be found that the satisfaction was the outcome of confidence in the wisdom of the Daimler engineers, rather than a personal conviction of the merits of the innovation.

Continental Europe is interested, but much less disturbed by the new motor, and never dreams, as is done by the Englishman, of a possible revolution of the motor industry by reason of the deal. In Belgium, Minerva has secured the rights and will adopt the motor, with their own modifications, to a certain number of their cars. Mercedes has secured the rights for Germany, but refuses to make any declaration regarding its adoption to their models. It would not be at all surprising if the patents were neglected next year. In France Panhard has the sole right to manufacture, but apparently did not consider the invention worth exclusive rates, for it is still open to a manufacturer in any other country to sell on the same territory. There will be a Panhard-Knight engine at the forthcoming Paris Salon, and in all probability a complete car—two or three have already been built for testing purposes—but it is exceedingly doubtful if any number will be put on the market. There is many an invention in the Panhard factory waiting to be fitted to cars, and it would be surprising if the American one could break down the French engineers' caution. In Italy Fiat may take over the invention, though nothing is yet definitely decided upon.

The first commercial application of the Knight engine in France is, curiously, not by Panhard, but by the Gem Company, a new corporation presided over by Leonce Girardot, one of the early French race drivers and a founder of the C. G. V. firm. Panhard having failed to secure exclusive rights, Gem has arranged with the English Daimler Company for the purchase of their engine built on the Knight patents, and will fit it to all their larger chassis during the coming season. The combination is rather an unusual one, for the Gem is a gasoline-electric of a special design, which up to the present has been driven by a standard type of gasoline motor. In view of the special claims put forth for the Knight on the grounds of silence and flexibility, and the peculiar advantages of electricity in these two respects, the Gem people believe they have secured a happy combination.

The Knight engine, with four cylinders in two groups, or nominally 38 horsepower, drives a continuous current dynamo occupying the position usually given to the flywheel. Transmission is through a magnetic clutch, and drive to the rear wheels by propeller shaft and rear live axle, a sliding gear combined with the differential housing, giving reverse. When the engine is running light the dynamo charges up the set of storage batteries carried in a special case at the rear of the chassis. When an extra effort is required from the motor, the storage batteries discharge into the dynamo, giving an additional force which may be valued at 10 horsepower for the large models.

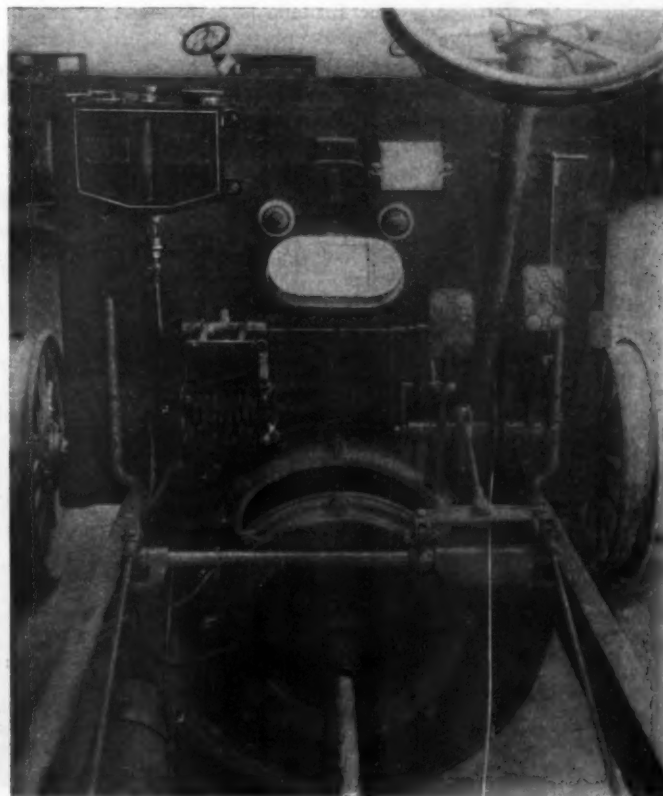
Ignition is by high-tension Bosch megneto, as on the Knight-Daimler engine. The carbureter is of a special type, entirely automatic, and magnetically controlled, the gas supply being increased as the storage batteries are brought into play, and automatically decreased when the dynamo discharges into the battery. Control therefore is as simple as that of a trolley car, and is indeed on the same principle. The left-hand lever on the steering wheel is used solely for starting the motor, by sending a current of electricity from the storage batteries into the dynamo.



Another View of Gem, Showing Batteries.

The primary set of brakes is magnetic, the reserve set being operated upon by foot pedal. All electric connections are contained in a double dashboard, in which position they are protected from damp and air. The gasoline tank, instead of being at the rear, as on the first models, is under the driver's seat, with a flow by gravity, this change having been made to give a better distribution of weight.

It is intended to put the new Gem-Knight chassis in service very shortly with the Paris General Omnibus Company, which has a monopoly of bus service in the French capital. The company is nearing the end of its lease, and whether it is renewed or given to a new body, mechanical service will be insisted upon by the city authorities. A large proportion of the horses have already given way to gasoline buses, but the company does not appear to be satisfied with the type adopted. A large company is offering to take over the entire service with a set of steamers, and those responsible for the Gem have similar intentions, believing that the combination of a flexible gasoline engine with an electric transmission will be ideal for crowded city service.



Dashboard and Dynamo of Gem Petrol Electric.

### FIVE FRENCH FIRMS OUT OF GRAND PRIX?

PARIS, Dec. 3.—Paris wants to know if her crack constructors have got cold feet. There is report abroad in well-informed circles that five of the most important firms have agreed among themselves not to compete in the next Grand Prix. The matter would not be so very extraordinary were it not for the fact that the firms in question, which are declared to comprize Brasier, Renault, Panhard, and Dietrich, have each a representative on the Racing Board and are therefore boycotting their own event.

Just how much truth there is in the report it is impossible to say, but there is no doubt whatever that these firms have discussed among themselves the advisability of abstaining from racing next year. Paris is more than surprised at the move, and bluntly declares that the crack constructors have got cold feet at the idea of second-rate firms, having had long experience in the construction of small cars, coming forward and beating them at their own game. They could stand being beaten by Fiat and Mercedes, but when it is a question of Blank & Blank, voiturette builders, coming forth with a special 130 millimeter-bore racer and beating them, they would prefer to keep out of the game.

Undoubtedly next year a number of firms having never before tackled a special racer, will come forth with a Grand Prix car. There are at least half a dozen firms having specialized in 120- and 130-millimeter more touring cars who will use the knowledge gained in this line to build a trio of racers. Berliet, the winner of the Italian 130-millimeter race, will enter three cars for the first time in the French Grand Prix, the driver of one of them, in all probability, being Thery. The engines are already under construction, and are declared to have a stroke of 200 millimeters.

### RULES FOR 1909 PRINCE HENRY TOUR.

BERLIN, Dec. 3.—In a conference at the Imperial Automobile Club, between the club and the industry, the regulations governing next year's contest were worked out and will be published in full during December. Of these the most important is the formula accepted by the meeting, in order to eliminate freak and racing vehicles as much as possible from the competition and give the normal touring car the chance it certainly did not enjoy in the first tour. The formula is as follows:

$$N = 0.013 \cdot i \cdot d^2 \cdot \sqrt{s^3}$$

$N$  being the horsepower,  $i$  the number of cylinders,  $d$  the bore in centimeters, and  $s$  the hub in centimeters. Beside this, all drivers who have neither won a cash nor art prize for themselves or the car-owner in any recognized contest (club arrangements excepted) will be credited with a certain number of points, in order to give them a more equal footing with professional drivers; this will, however, only have a bearing on the whole result, and the speed trials on the flat on the first and last days will be excluded.

The minimum weight for the weakest cars, with a capacity of 1.6 litres, is 750 kilogrammes, with a further kilogramme for each one-tenth of a litre more. The weight of the body may be less than fifteen per cent. of the whole.

At the same meeting it was decided to turn the proposed voiturette competition into an international event, only factories being allowed to enter with teams of three cars each. The date was fixed for August 29 to September 2, on the Berlin-Brunswick-Weimar-Würzburg-Heidelberg-Strasbourg route.

### BOSCH IGNITION FOR 1909 MERCEDES.

Editor THE AUTOMOBILE:

On page 670 of your November 12 issue, in discussing the proposed improvements on the Mercedes car for 1909, it is stated that "Ignition is by Eisemann high tension magneto."

As a result of inquiry, we have before us authentic information, proving this report printed in your publication as entirely void of foundation. We are assured that "Bosch Ignition" will, as in former years, be the standard equipment of the Mercedes 1909 car.

New York.

BOSCH MAGNETO COMPANY,  
G. JAHN, Manager.

### GETTING BACK AT NEW JERSEY.

NEWARK, N. J., Dec. 7.—The Newark Board of Trade and the New Jersey Automobile Trade Association have joined forces and will endeavor to combat, by means of suitable legislation, the boycott in all branches of automobile manufacturing against the State. This boycott has resulted from New Jersey's refusal to exchange courtesies with other States; that is, to recognize the licenses of all others recognizing the New Jersey license, except Pennsylvania, where a new law seems assured this Winter. Other incidental causes are the "correspondence" justices, arrests and trials before minor courts, and other annoying points of the motor law. It is asserted that this boycott is being felt throughout the State, parts manufactured to the amount of \$8,000,000 being affected in Newark alone. Among the ways in which this is being felt is that car manufacturers are not placing contracts for parts in this State. Others who have existing contracts will not renew within the State. Thus, the high-handed methods are being brought home by a curtailment of business.

### ANENT THE BRIARCLIFF TROPHY RACE.

NEW YORK, Dec. 7.—Several meetings have been held and several more may be necessary before the automobile manufacturers' committee will be able to agree on the plans for the stock car race which will be repeated this coming Spring. The point of discussion is the cylinder bore, each manufacturer seeming to have a different idea. The limits discussed varied from 5 inches up to 5 1-2 inches for four-cylinder motors. The advocates of the former figure had in mind barring the racers especially prepared for the international races, the rules for which limit four-cylinder motors to a bore of 5 1-8 inches. No decision has been reached, but it was decided to hold the race under the same name but at a later date, probably the first week in June. The place was not finally decided upon, for it was thought that inducements should be offered as in France. It is certain that the race will not go far from New York City.

### CUBAN RACE PROJECT ALIVE AND KICKING.

NEW YORK, Dec. 7.—The Board of Governors of the Automobile Club of America has definitely decided not to have any hand in the proposed week of speed tests near Havana, Cuba, whether these races be held or not, but prominent members may carry it through. The Cuban people are very strong for it, and the races will undoubtedly be held, not the first week in January as was originally planned, but later, possibly in March. To conduct the race, Harry T. Clinton and A. H. Whiting, of the Contest Committee, have both been secured for duties similar to what they had at Savannah.

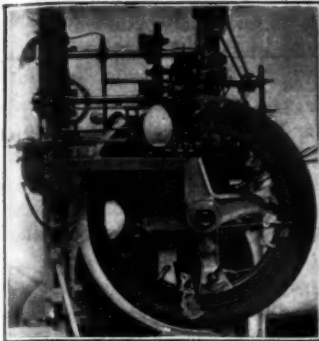
### EXPULSED THOMAS FOR RECKLESS SPEEDING.

NEW YORK, Dec. 7.—At to-night's special session of the board of trustees of the New Jersey Automobile and Motor Club, E. R. Thomas, the New York banker, was summarily expelled as a result of his speeding at Long Branch on August 14 last. Testimony showed that at the time the accident happened Thomas was running his car at a rate of 80 to 90 miles per hour. Thomas was represented by counsel, who stated that he would be crippled for life as a result of the accident, but neither this fact nor counsel's strong plea for delay was given any weight. In addition to this, Thomas still has his trial on several counts by the State of New Jersey coming to him.

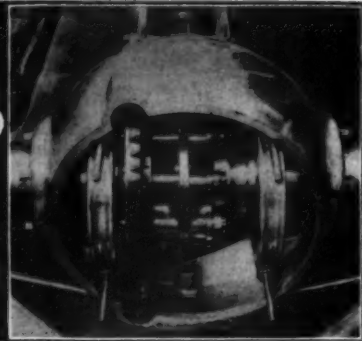
### DAYTONA RACES SAID TO BE ASSURED.

NEW YORK, Dec. 7.—It has been finally decided that the Florida speed tests will be held next year, probably at Daytona during the last week in March. The later date was selected so as to obtain the most favorable conditions. The earlier experiences rather lead to the conclusion that this late date is wise.





# Technical Observations at Olympia



LONDON, Nov. 21.—That big section of the show which comprises the home countries' exhibits can this year fairly lay claim to showing greater extent and variety than the Continental section, which has in former years been classed first. The main feature which characterizes the British exhibits as a whole is the breaking away from the set groove of standard practice into which so many firms seemed fixed. This change has in great measure been caused by the fact that almost all the big manufacturers have now seriously taken up the medium-powered and light car, and the excellent designs which such firms have evolved have stimulated the smaller makers to fresh efforts. Not a few have succeeded in no small degree.

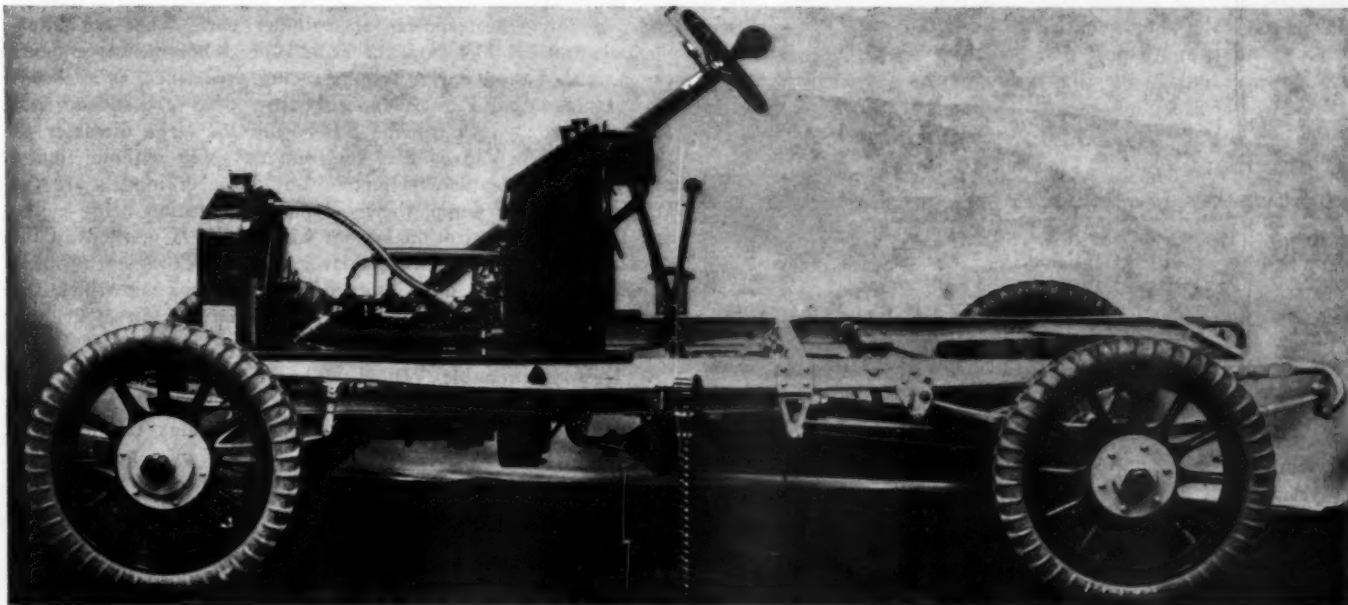
Some representative cars are described in detail below, but where one is mentioned there are a dozen others of equally good design, of which lack of space prevents mention.

**The Austin Product.**—One of the most representative British stands is that of the Austin Company. Although this firm commenced operations less than three years ago, their cars have acquired a great reputation and have risen right into the first rank. The models exhibited range from 60-horsepower six-cylinder type, of which two standard chassis were run in the Grand Prix, down to the new 15-horsepower light car. The most popular vehicle—excluding the new 15-horsepower—is the 18-24-horsepower model, and of interest as showing the sound design of these cars, the particular show chassis of this power on view now appears for the third year in succession and yet is quite up to date in every detail. All the cars except the smallest have separate cylinders, and gas-engine practice is followed in that the liner is not joined on to the waterjacket at the top extremity and so is free to expand upward when the

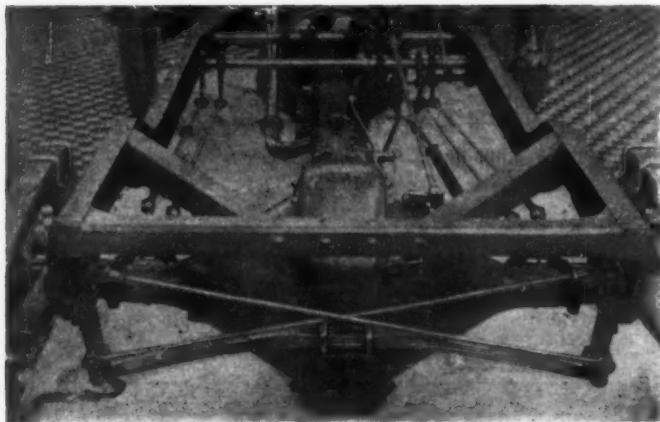
temperature is raised, while a small washer keeps the water from entering the cylinders. Bosch dual ignition is fitted, giving a special hand-operated magneto and coil for starting "on the switch" with ordinary high-tension magneto for running. A flat disc clutch conveys the power to a four-speed gearbox with direct drive on third and final transmission is by live axle, although on the big 60-horsepower car chain drive can be provided if specified.

A new form of rear suspension is fitted to the 40-horsepower and 60-horsepower cars, this permitting of the use of complete elliptic springs without the disadvantage of side play usually associated with this kind of spring. Lateral stability is obtained by taking the drive at the forward extremity of each spring and not in the center, while vertical flexibility is secured by shackling the springs together at the rear and by holding the top spring in a pivoted connection with the frame. As only the forward end of the spring is rigidly connected to the frame and the rear end is quite free, full up and down movement is allowed, while the central pivot reduces the side play to the same value as it would have been with a semi-elliptic spring of the usual form. An interesting feature of all these cars is that they are turned out from the works with full supply of tools and lamps, and even a speedometer and mileage recorder is included.

The 15-horsepower car is a new and popular type which is quite up to the level of the other Austin products. The four cylinders, size 3 1-2 by 4, are cast in one piece together with the top half of the crankcase, and the valves are on opposite sides. Natural circulation of the water is relied on, and a large honeycomb radiator being fitted, the fan belt of which is



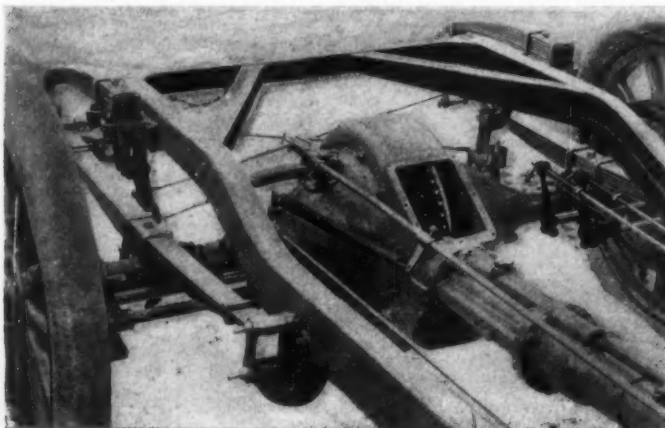
The Unusual Nameless Chassis—New Kempshall Tires and Peculiar Muffler.



Humphris Compensating Cross Spring.

kept in tension by a controlling spring. Forced lubrication is provided, and ignition is, of course, by high-tension magneto. The leather clutch is of novel design and two failings of this type are cleverly obviated. The leather facing is divided into six loose segments, fitted on flat springs of slightly greater curvature than the cone of the flywheel. These segments can be inserted into place without disturbing the body of the clutch, the ends of the flat spring plates fitting into grooves on the circumference of the clutch casting and being secured in place by lock nuts. By having the segments in this shape easy engagement is insured, while the ease of detachment makes it a simple matter to remove the leather for occasional softening treatment. The engine and three-speed gearbox are mounted on a channel steel subframe, which is pivoted at the front to a cross girder of the main frame and fastened at the rear to another cross member by two bolts, thus giving simple three-point suspension. The gearbox is in one piece, and, instead of aluminum, cast iron of special grade is employed, the makers claiming that a stronger job can be provided with but small increase in weight. The final drive is by propellor shaft to the rear live axle and this is fitted with substantial torque rods. Ball bearings are used throughout the transmission and the brakes are of the expanding variety, enclosed from mud. The price of this car complete with five-seated body comes out at \$1,750, which appears reasonable, judged by the early demand.

**Talbot Has a New Clutch.**—Mention of the clutch improvement on this Austin calls to mind the new cone clutch on the Talbot cars—productions which are noted on this side for high engine efficiency. These cars have a leather cone clutch in which the drive is transmitted from the coned portion to the clutch shaft by a claw coupling. When the pedal is depressed the clutch first comes out of engagement with the flywheel in the usual way, but further movement of the pedal separates the two portions of the clutch itself, so that the only revolving part which can cause scraping of the gears is the comparatively light



Rear End of the Humphris Chassis.

clutch shaft itself. On releasing the pedal, after the gears have been meshed, the reverse action takes place. In practice it is found that any gear can be meshed without the slightest noise or jar.

**Napier Worm-Driven Small Cars.**—This is the first year that Napiers have been seen in the light car section, new 10-horsepower and 15-horsepower models being staged. The 10-horsepower car is of the two-cylinder type and the 15-horsepower engine has four cylinders, but the other features, save as detailed below, follow standard Napier lines and the complete cars are covered by a three years' guarantee.

Both models have the cylinders cast in pairs, bore and stroke being 102 by 127 mm. The valves are all on one side and are enclosed from dirt by an aluminum cover plate. The ignition is effected by a Bosch high-tension magneto carried on a platform at the front of the engine. Below the magneto is the centrifugal water pump and below that again the gear oil pump. The carburetor is novel in that the mixing chamber is on top of the engine, separated by a long water heated pipe from the spray portion, which is at the level of the top of the crankcase. The reason for this construction is not altogether obvious, but the makers state that it has been found to give excellent results in practice. The disposal of the flywheel in front of the engine and the attachment of the gearbox directly to the rear of the crankcase is a step new to British—though perhaps less so to American—designers. The multiple disc clutch, with flat plates of tool steel, is enclosed in the gearbox, which gives three speeds with direct drive on top. A cast sleeve projects from the gear box to the outside of the frame and to this is bolted the gate in which the change speed lever works. Another projection at the rear of the gearbox almost completely encloses the foot brake and so protects this important part from dust and mud. Final drive is by propellor shaft and worm gearing, the driving shaft coming below the axle. This has the obvious disadvantage of reducing the road clearance so that in cars for foreign and colonial use a bevel drive is substituted. The chassis price of the 10-horsepower model is \$1,475 and of the 15-horsepower \$1,750. The six-cylinder engine of the same type appears in the 30-horsepower car, while above this other six-cylinder models range up to 90-horsepower.

**Humber Firm Has a Full Line.**—On the Humber stand all the cars are shown together without distinction of name as formerly, owing to the recent transfer of the Beeston Works to Coventry, where the firm has now the biggest motor factory in Europe. The cars shown range from the new 8-horsepower two-seater and the well-known 10-12-horsepower model, which has probably had a bigger sale than any other two European cars, to the 30-horsepower six-cylinder car. The two intermediate four-cylinder cars, the 22 and the 28-horsepower embody the results of the Tourist Trophy racing experience, as is shown by the bigger ratio of stroke to bore—90 by 140 in the first case and 100 by 150 for the other—and the large diameter of the valves, which gives very high engine speed without falling off of power. Features common to all Humber models are the absence of water pump, thermo-syphon circulation being relied on; the forced lubrication system with which is worked an indicating pointer on the dashboard, showing how much oil is circulating, and the well-designed short gearbox, in which the lay shaft and reverse pinion are idle when top direct gear is engaged.

**A New Detachable Wheel.**—The new 8-horsepower two-seater has engine with bore and stroke of 90 by 120, and duplicate ignition is fitted. A fan flywheel contains the flat disc clutch and the three-speed gearbox is operated by a gate change. Final drive is by propellor shaft and all brakes are of the enclosed internal expanding variety. The price of this model is \$975. Examples are shown of the Humber detachable artillery wheel, which can be fitted to any of the new models. This wheel is similar to the popular Rudge Whitworth wire wheel in having an outer shell hub with slots engaging with feathers on



the inner or permanent hub attached to the axle. A neat spring locking cap, which can only be loosened by a special spanner, prevents any possibility of the wheel coming adrift.

#### The First English Two-Cycle Advocate.

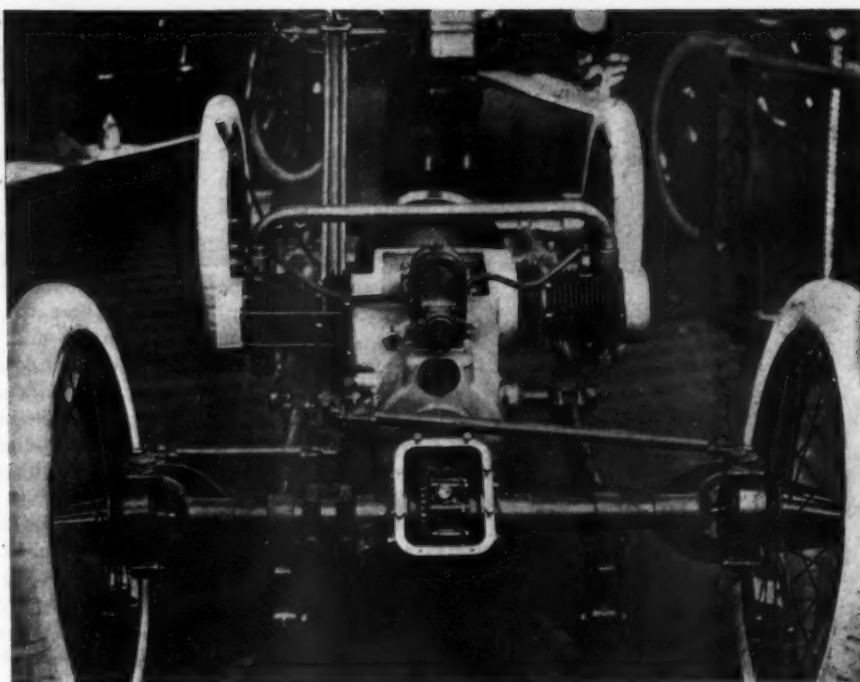
—A most interesting car is the Valveless, which has a special type of two-cycle engine. The two cylinders have a common combustion chamber and are placed so that their cranks are parallel. The two crankshafts are connected by gearing and are set so that both pistons rise and fall together. One of the crankshafts drives the magneto and the water and oil pumps, which are placed at the front of the engine, while the other crankshaft has a fly-wheel at the rear end and so transmits the power through a cone clutch to the three-speed gearbox. The final drive is by live axle and the remaining features are quite standard, excepting, perhaps, the silencer, which runs the whole length of the frame. This, the first British car with two-cycle engine, showed up well as regards fuel and petrol economy in a recent official Royal Automobile Club trial. It is somewhat interesting to note that at the last show the engine, although in action the same as now, was placed horizontally in the center of the frame with epicyclic gearing and single chain drive. This method of construction has had to be abandoned in deference to public opinion, which seems so hopelessly conservative where changes from standard practice are concerned. It is for the same reason that the Lancaster this year has wheel instead of its successful form of tiller steering and also that Cadillac has adopted the sliding gear.

All parts of the Valveless car are made to specification by a prominent engineering firm—D. Brown & Sons, of Huddersfield—and the Valveless Company has only to assemble the parts. This is an arrangement which would seem to offer big possibilities for the small maker.

**The Lower-Priced Cars, the Phoenix.**—Easily first in the cheapest class, which may be taken to include two-seaters listed at under \$750, comes the Phoenix 8-horsepower car, which has three years' excellent performance in road trials to recommend it. The two-cylinder vertical engine, which has bore and stroke of 80 by 80 mm., is placed across the frame and has overhead inlet valves and magneto ignition. A multiple disc clutch is fitted in conjunction with a two-speed and reverse epicyclic gear running on ball bearings. From the gear the drive is taken by a single chain to the rear axle, which has spur type differential and full set of ball bearings. The frame is tubular, supported front and rear by semi-elliptic springs as usual. Brakes are fitted to the front wheels—and this is a point which is attracting growing attention from designers—and there are also band brakes on the rear hubs worked by a side lever.

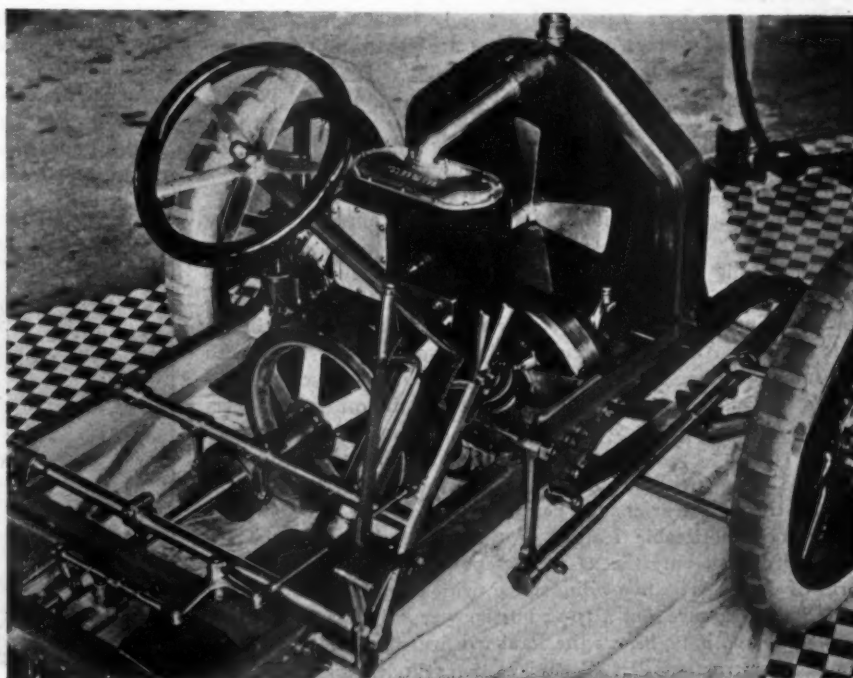
Further refinements on this little car are the dust screen, which extends from front of the frame to the rear axle, and the provision of gauges to both petrol and oil tanks. The price for the two-seater, with tools complete, is \$700.

**New and Original Two-Cylinder Two-Seater.**—Another interesting small car, a newcomer to the ranks, is the 8-10 Smeddle-Kennedy two-seater, which hails from New-

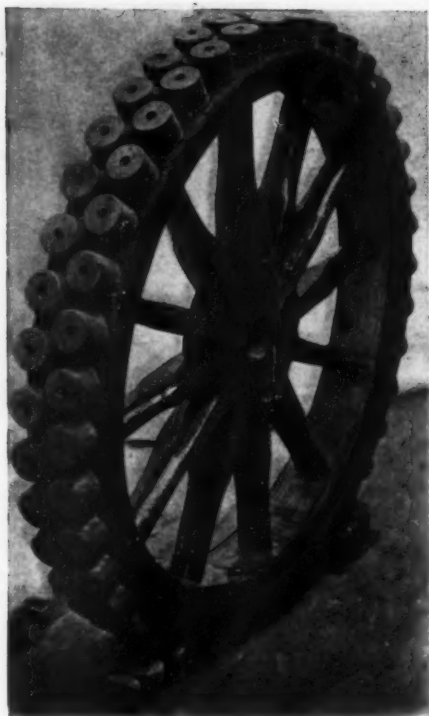


Pilgrim Front Drive, but Unlike the Christie.

castle-on-Tyne. Right through the car the designers have ignored standard practice and have constructed every part with the object of simplicity and ease of adjustment by the novice. The engine has two 3 1-4-inch cylinders cast together, the piston stroke being 4 1-4 inches. The valves are of the overhead type fixed in cages and are all operated by a single overhead camshaft running in ball bearings and driven by bevel gearing from the crankshaft. This crankshaft is enclosed by a dustproof cover that can be detached, together with the camshaft gear, by undoing four wing nuts. To reset the timing it is only necessary to turn the flywheel till a mark on it lines with a pointer on the crankcase and then to see that the mark on the camshaft spindle coincides with a line on the casing. A well-designed automatic carburetor is bolted direct to the inlet ports without the use of an induction pipe. Ignition is by Nieuport high-tension magneto. In this engine, as in the Valveless, the crank



Valveless Engine, Which Attracted Attention.



K. T. Sectional Tire

The front of the frame is carried on an inverted elliptic spring, while at the rear are two inverted quarter elliptics, these being free to slide in boxes on the rear axle. With 760 by 90 tires and body complete, this excellent little car sells at \$1,050.

**The Ball-Bearing Pilgrim.**—As a last example of the light cars the 9-horsepower Pilgrim may be cited. This is a very light car—700 pounds is the weight of the chassis—on new lines, which has been described as the nearest approach yet to the American buggyabout. The engine has two horizontal cylinders of size 86 by 72, with two speed epicyclic gear alongside, no separate clutch being fitted. The drive is transmitted to the front wheels through double universal joints. The engine has ball-bearing connecting rods and magneto ignition. Front wheel brakes are provided, these being operated by a foot pedal, while a side lever controls the back brakes. The price of this two-seater is \$650.

The few cars here mentioned are only isolated examples of the many of all powers and types that are shown, but they may be taken as representative of the majority.

#### Continental Cars as Seen by British Eyes.

Reviewing some of the principal stands in order, that of the Renault is found to attract most attention, for to the average autoist these cars are representative of France, just as the Mercedes is of Germany, and as Daimler and Napier uphold the British name. No less than five four-cylinder models are made for the coming season, these being the 14 horsepower, 16 horsepower, 20 horsepower, 20-30 horsepower, and the 35-45 horsepower. Finally, the huge 50-60-horsepower six-cylinder chassis ends the list. All these, except the three smallest, are fitted with self-starting devices. The 35-45 and the 50-60 cars have the well-known Renault compressed-air system, while the others are operated from a foot pedal working through a chain and ratchet gear and so rotating the crankshaft. In all other points the cars follow 1908 design without alteration, even the cone clutch and the straight-through gear-change being the same as ever.

The most noticeable feature of the Panhard cars is the absence of chains, only the 25-35 horsepower model retaining this form of drive. The two-cylinder car with epicyclic gear has not made its appearance, but a 10-12 horsepower light car, with cylinders 80 by 120 mm., brings the Panhard firm into line with other famous constructors. In all engines the cylinders are cast separately and the crankshaft has five bearings, an elaborate force-

throws are set so that the pistons rise and fall together, thus giving impulses at even intervals. This method is not common to British design, but should be an improvement if the balancing has due attention. The fan flywheel contains an expanding clutch and from here a long propeller shaft extends to the rear axle, a forward continuation of the latter containing the gearing which provides three speeds and reverse. The frame is of pressed steel and is stayed by four radius rods, two for each axle, which converge on a central bracket.

pump lubrication system to all parts being used. A special type of magneto is fitted, in which the advance and retard positions are obtained by "rocking" the magneto. The disc type of clutch is contained in the forward part of the gearbox, which latter gives four speeds and reverse with direct drive on top. By employing smaller gear wheels of a special steel, the old humming noise which was such an inherent feature of former Panhards has been entirely overcome.

The adoption of the Knight valveless engine by this firm was not arranged sufficiently early for an example of this new type to be shown, but this will appear on the Panhard stand at the Paris show. There are, however, two Continental stands at this show—the Minerva and the De Luca Daimler—which stage cars fitted with this American invention.

The Mercedes cars remain substantially the same as for 1908 season, with the main exception that on all models the disc clutch replaces the old scroll type. The low-tension magneto works in conjunction with the special Bosch magnetic plugs, so dispensing with the moving tappets. A new multi-jet carburetor is fitted and the control levers now remain stationary, instead of moving with the wheel as before.

An Italian car, which, probably on account of its moderate price, has acquired a good popularity in this country, is the S. C. A. T. This car hails from Turin and derives its name from its designer, Ceirano, who is stated to have been responsible for the early Italian cars. The 22-horsepower model is the car which ran so consistently, although unplaced, in the Tourist Trophy race, the bore and stroke being 101 by 140. The valves are no less than 50 mm. in diameter, and as a result, very high engine speed is obtained. High-tension magneto ignition is standard, but the low-tension variety can be supplied optionally. The disc clutch four-speed gearbox and shaft drive follow customary Italian practice, the only additional feature of note being the compressed-air starting device, similar to that of the Renault. The price of this chassis is \$1,750, and that of the 14-horsepower model, which has four cylinders 85 by 120, is \$1,475.

The Rapid and the Bianchi cars on view follow the above standard lines almost exactly, the price, however, being higher.

Examination of the Hotchkiss exhibit reveals the fact that the famous gun firm has now given up the use of ball-bearings in the engine. The principal model is the 20-30 four-cylinder with bore and stroke of 110 by 130. The crankcase is not split in the usual way, but is in one piece, with big end plates to permit of the introduction of the crankshaft, which runs on three long phosphor bronze bearings. The carburetor is of the multi-jet type, and the float chamber is connected with the inlet pipe in such a way that the level of the liquid in the jet varies with the engine speed. The remaining details follow standard practice.

At the time of writing, toward the end of the show, which closes to-night, great satisfaction is being expressed on all sides at the good business which has been done—far exceeding expectations. Consequently, much optimism prevails.



Windham Interchangeable Body, a Taking Novelty.



## BENEFITS DERIVED BY HEAT TREATING STEEL\*

By THOMAS J. FAY, PRESIDENT SOCIETY OF AUTOMOBILE ENGINEERS

**H**ARDENING through and surface hardening are quite different processes. For surface hardening the "cementing" process (sometimes called case-hardening) is called into play. In this process the primary consideration is that the steel shall be low in carbon. If the carbon is above 20 points, however, the results will not be satisfactory. The reason for this, as before stated, lies in the fact that the core (under the shell) will be hard and of a non-dynamic character.

Cementing can be done in the muffle furnace or in the metal salts bath; the results will be nearly the same in either case, because in cementing work the parts to be treated are placed in hermetically sealed iron boxes, completely buried in hardening powder. The result is the parts are not exposed to the uneven heat of the products of combustion in the muffle furnace, nor will sudden fluctuations of heat be imparted to the steel to be treated.

The softer the steel is (the lower the carbon) the better will be the core from the kinetic point of view. This will be especially true if the metalloids are low and the texture of the steel that is possible of attainment by the "acid" process. However soft the core may be, it will be toughened in the oil quenching and subsequent tempering process. The shell (originally, however soft the core) will take on the hardness due to cementing, and it is possible to impart to the surface of even dead soft iron, enough carbon to render the shell "glass hard."

The cementing temperature is about 900° C., as a rule, but higher temperatures will result in an increased depth of carbonizing while the hardness due to quenching will be greater for a greater difference as between the quenching bath and the temperature of the steel as it contacts with the quenching bath. Carbonizing should not be done at temperatures higher than the occasion would require and 1,000° C. would seem to be the maximum.

The time required to carbonize will depend upon the composition of the steel and the temperature. Swedish iron, very low in carbon (5 points is a fair figure) will take the longest and the highest temperature. Chrome nickel steel, with carbon at about 20 points, would probably take the least time in the carbonizing. In this latter case, too, the temperature should not go above 900° C.

The finest nickel steel products run about 10 points carbon for cementing work. With alloys the problem is one demanding more care, greater precision of temperature regulation, and finer steel. The "hardening powder" may be "Krupp hardening powder," for the grades of steel such as the Krupp Company, usually furnish for automobile work or the great variety of products for this purpose can be used with more or less success. One point is certain, however, the same materials should be used every time in any given shop because it is not possible to do uniform work and change the powder frequently. Of the various materials used for the purpose the following are a few:

### Materials Used in Cementing Work.

If the electric furnace is available it will be a simple problem, since cyanide of potassium may be melted in the furnace and raised to the desired temperature. The pieces to be carbonized may be hung in the molten bath and left there for the requisite period of time, depending upon the composition of the steel. The formula of this compound is  $K\text{Cy} = KCNO$ . In this we have the carbon and nitrogen, the property of the latter being to increase the penetration of the carbon. It is for this reason the indiscriminate use of cyanide of potassium is not recommended by the author, in the manner as one can observe without traveling far. The steel must be low in carbon to warrant the use of this compound. Of cyanide of potassium the "Materia Medica"

has to say as follows: "Characteristics.—White, opaque, deliquescent, crystalline mass, having the color of hydrocyanic acid, readily soluble in water, INTENSELY POISONOUS. (Simple.)—It is a matter of the greatest importance to remember the poisonous nature of this compound." The temperature of the molten bath can be about the same as for cementing with any hardening powder (or slightly less), while the time to grow the requisite depth of carbon will be a little less. The method is rapid since there will be no need to "pack" the parts to be hardened.

If bone products are to be used in the carbonizing process, they will rank, as regards their ability, in proportion to their fineness. The smaller the mesh through which the bone will go the more effective it will be as regards time shortening in the process. The coarser the bone is, the more space must be allowed around the parts in the box, for the bone, the actual weight of bone will be less since the per cent. of voids will be the greater for the coarse bone. For slower work, mixtures of bone and charcoal will serve the purpose while, to shorten the time, fine bone and charred leather will serve the purpose.

### Experimenting Is Not Always Profitable.

Cyanide of potassium and common salt (sodium chloride) may be added if it is desired to increase the penetration, and the proportions of the component compounds can be varied over broad ranges. There is no need to risk experiments in a matter of this sort since very satisfactory results can be realized through the use of bone under suitable conditions. At all events, if a muffle furnace is to be used it is essential to pack the parts to be hardened in a box (cast iron) provided with a cover, so arranged as to permit of "luting" the cover with fire clay, to thoroughly seal the box. The box must be so roomy as to prevent the parts from contacting with the box.

The parts must be put in the box and the bone must be tamped in and around the parts tightly. Surfaces not to be carbonized must be protected by fire clay to an adequate depth. Warping must be aborted by avoiding any way by which the parts to be hardened will receive an uneven pressure. When all is ready the box can then go into the muffle furnace (the furnace can be up to heat) and the time of carbonizing will then count from the time that the contents of the box reaches the cementing temperature.

In the quenching of carbonized parts warping is very prone to follow, this is especially true if the metal is of a fine grain, but it is almost impossible to avoid it if the metal has been bruised in a previous forging process, or if the steel has been properly forged but not annealed before going into the cementing process. A medium grain uniform texture (not forged) steel will behave very well.

Warping is also due to unsymmetrical shapes and to the manner in which the parts are allowed to make contact with the quenching bath. Warping is also much to be dreaded in cases of high quenching temperature, and if the quenching bath is both cold and of high "specific heat," or if the property of disseminating heat is marked. Oil quenching from a low temperature then would be less likely to cause warping than water quenching from a high temperature. On the other hand, salt (sodium chloride) in the water would to a considerable extent abort the warping tendency.

Warping will generally follow if the parts to be hardened are not deftly lowered into the quenching bath, in a plane parallel to the greatest length. Tumbling the parts into the bath *en masse* is but to warp them. If the bath is of some media of a high boiling point (at the atmospheric pressure) the tendency to warping is somewhat less, since steam will not then insulate the hot surface unevenly.

Warping is due to the unequal distribution of the strains, and if the parts do not cool equally over all zones, strains will be

\*Continued from page 781, "The Automobile," issue of Dec. 3.

set up in a manner unequal. Obviously, the thin portions will cool the first and the masses of metal last; any means of equalizing these tendencies will have a lasting benefit. Cam shafts, for illustration, are very prone to warp; they must go into the bath end on and quickly.

It is difficult to keep the bath from forming a layer of steam over the hot surfaces of the parts, and to avoid this the parts must be kept moving in the bath until the metal has cooled below the danger point. Gears, sprockets and other disc-like parts should be nested and clamped between soft iron plates in such a way as to perfectly expose the surfaces to be rendered hard, yet withal to prevent warping. Gears will curl if they are not thus nested, and in fine the nesting is desirable in that the number of gears that can be handled in a given time will be more.

#### Tempering Should Be Carefully Done.

In tempering (drawing the temper) there are two objects, viz.: (1) To render the steel dynamic (increase the kinetic ability); (2) equalize the internal strains. Even if the internal strains are below the ultimate strength of the steel (below the warping point) they will abound to a greater or less extent, at any rate, to the detriment of the parts, since from the ultimate strength must be subtracted the internal strains. This is a matter not usually well understood, but it is plain enough if it is given but a moment's thought. If the ultimate strength of the steel is equal to (a) and the internal strain in a zone is equal to (b), the remaining strength will be equal to  $a - b = c$ . Illuminating the internal strains will restore the original strength:  $b + c = a$ .

There are still a large number of points in relation to heat treatment that could, with profit, be discussed. Take for illustration the question of composition; to heat some products would be to ruin them. On one occasion the author ordered some nickel steel to be as follows:

	Per cent.	
Nickel .....	3.5 %	} or within five points below.
Carbon .....	0.25%	
Silicon .....	0.20%	
Sulphur .....	0.04%	
Phosphorus .....	0.04%	
Manganese .....	0.40%	

The material came and was worked into the desired shape. The parts were then quenched from 900° C. and subsequently tempered at 250° C., with what result? It was a waste of time. It was not a waste of material, waste cannot be wasted, the parts were brittle as unannealed glass. Further investigation of the matter showed that the reliable (?) vendors of the product, furnished a *special heat* of a product that was to be better than the steel usually to be had on the open market, which special heat (when chemically investigated) proved to be as follows:

	Per cent.	
Nickel .....	3.05 %	} far too high in nickel; metalloids very high.
Carbon .....	0.42 %	
Silicon .....	0.28 %	
Sulphur .....	0.08 %	
Phosphorus .....	1.05 %	
Manganese .....	0.55 %	

Why did we not subject the steel to an analysis before working it up? The requirement as the original specifications would indicate, was not the finest steel by any means; it was not supposed that any steel mill would fail to fill an order of steel of no more than moderate quality; at all events the steel would not stand for heat treatment, and that is the point.

Records of actual failures are, of course, more valuable than suggestions of how to succeed. On the other hand one does not like to brag about one's failures; the fact remains, to succeed with heat treatment it is necessary to select the steel, in view of the requirements. The best way, perhaps, would be to get acquainted with regular brands of steel and use them for the purpose for which they are supposed to offer advantages.

There is one other matter of the greatest importance to be mentioned ere this subject is closed out. It is known that

chrome nickel steel, if it is forged after it is received from the mill, is rendered more or less hard and unmanageable. It is a fact that the vendors of the same steel can make forgings of the same material and they will be quite as soft as the round bars; why? It is a question that has puzzled most of us for many a day. We even went so far as to persuade ourselves that the mills had a monopoly of brains.

What it looks like is a monopoly of *cupidity*; the mills do not deliver bar stock in the same shape or condition as the stock they, themselves, use in the forging process. The bars delivered are heat-treated; the stock they use is normal; result, they can make forgings that will be soft enough to machine. The effect of the heat treatment is to render the bar steel more presentable. The same treatment renders the stock of no value as forging stock.

For forging work it would be better to order steel in the normal state, and if it is to be heat treated, perform that operation upon the finished articles. It must be remembered, however, the forgings must be annealed before machining, for two reasons, viz.: (a) To render them soft for machining; (b) to abort warping in the subsequent heat treatment.

It would be possible to heat-treat with less of warping, if the parts were annealed again after machining, but this is an ultra refinement. In the annealing process, if the forgings are to be soft it will be necessary to proceed thus:

1. Apply the initial heat by means of a wood fire, to avoid any but a gentle heating of the steel until the metal is warmed up;
2. Then heat slowly and uniformly in a suitable furnace, up to the forging temperature;
3. Commence forging at once, do not allow the steel to "soak";
4. Forge continuously, until the steel reaches the low forging limit;
5. If the desired shape cannot be had by that time, heat again to the high forging limit in the same slow and even manner.
6. Continue to forge without allowing the steel to soak. Forge until the low forging limit is reached. (If necessary repeat.)
7. Allow the forgings to cool slowly in lime;
8. Anneal at temperatures between 870 and 1,000 degrees C., depending upon the composition of the steel (900° C. is the most used temperature);
9. Double anneal if the steel is persistent in its hardness.

#### Keep Within the Forging Limits.

The forging limits of heat will lie between 965 and 678 degrees C. The quality of the forgings will always depend upon the work put upon them. If they are not worked down to the low limit of forging the grain will be coarse and open. If the steel is heated to a point far above the high limit, the structure will tend to be crystalline. If the steel is heated unevenly and not through, the result will be a *bruised* fabric. Persistent hardness is to be dreaded, and it will follow if the steel is not properly forged. In that event, annealing will not accomplish the desired end. These fabrics are prone to hold to their habitual allotropic state and that is not the state, *alpha*. If the steel holds to the *beta* state of allotropy, it will be brittle; if, on the other hand, the *gamma* allotropic state obtains, the steel will be hard.

The higher the carbon the more is the likelihood of the steel to hold to its brittle or to its hard state. Alloy steel is the greatest offender in this connection. It is therefore a matter of skill in the light of knowledge, to succeed in rendering forgings soft to machine, after going through a forging process.

If, on the other hand, the steel is oil-treated at the mill before it is forged, there is no chance at all of being able to make the forgings soft enough to machine, commercially. If the user of steel demands the properties of oil-treated chrome nickel steel, they must, of course, put up with the consequences. It is not then the fault of the fabricator of the same.

The normal chrome nickel steel will not look nearly so good as the same after heat treatment, and it is possible the fabricators were compelled to resort to treatment before delivery, in order to be able to sell the steel. It was not so long ago that



impossible values were demanded, (and advertised) values, in fact, only to be had if the steel was oil quenched and but partially "let down." Of course such products were difficult to machine, and if forged, even refused "Novo Steel" cutters, in the hands of men of much skill.

In conclusion of the subject, there is at least one other matter that should have some attention at least; that is to say, the variety of brands of steel should be limited in so far as it may be possible to do so.

If all parts of a car could be made of a single brand of steel the better would be the results, all things considered. The builders of the cars would be able to take a greater advantage of the influence of quantity in purchasing the steel; the artificers would attain a greater knowledge of the steel, and the user of the car, in each case, would have less trouble in his quest for suitable repairs.

Theoretically, it is possible to provide all the desired qualities in steel, using a single grade of the same. This is not to say the grade in question would have to be some fine and rare brand of steel; indeed, the product would have to be either a very near approach to "iron" or the ingredients placed to impart hardness would have to be anything but "carbon."

The absence of carbon, excepting as a necessity in production, (limited to a low point) would render the steel more nearly universal in its application than would be the case were the carbon present in any considerable amount. The steel could then be subjected to "heat treatment" to impart the several desired qualities, without danger of destroying the dynamic ability of the same.

In the absence of carbon it would be possible to consider alloying as a regular thing. This statement takes into account the fact that the carbon would have to be present in quantity sufficient to render the fabrication of the steel possible. The carbon could be limited to say, 0.10% (maximum), under which conditions nickel would impart excellent qualities, and chromium would be of exceeding value. Even vanadium might be an ingredient in what could be called a universal product. It will be understood, however, it is not well to have more than two alloying elements in any product on the ground that uniformity cannot be assured when the alloying process is complex. Even one alloying element is better than two, if with one element the desired qualities can be imparted to the steel.

In the long run it is the ultimate cost that limits quality. This ultimate cost takes into account the first cost of the steel, and the difficulty in manipulating and machining the same. True, it is never necessary to use steel better than the work demands, but experience so far has not rendered it possible to decide that the materials used in automobiles were better than they should be.

At all events it does look as if the end will be towards a class of steel that will lend itself to heat treatment, to impart the several desired qualities, and in this steel the chances are the carbon content will be very low indeed. It is not to the inter-

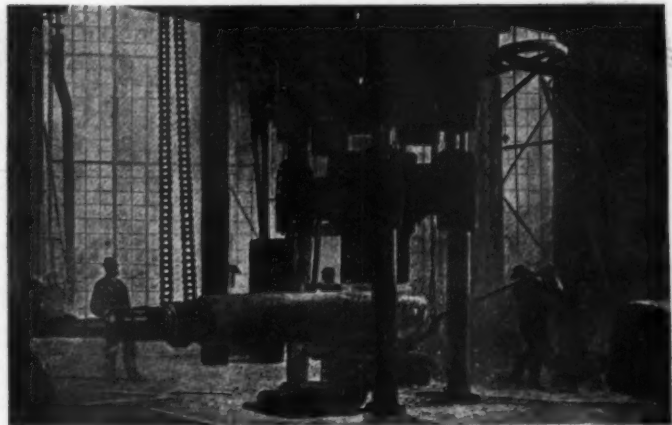


Fig. 1—Hammering process in the fabrication of steel.

ests of the fabricators of steel to hasten this time, because the lower the carbon the quicker will the linings of the converters and the furnaces burn out, and the fabricators of steel will not advocate a process that ends in any extra cost to them. It might be argued they can charge for the extra cost, due to the high heat, in the absence of carbon; but on second thought, it is to say they cannot charge more than they do, unless the "tariff" is increased, because they now charge on a basis of the cost of the imported article, which includes the tariff and the transportation.

Any increase in the cost would enable one to import the steel at a saving, and it goes without saying that users of steel would take advantage of a possible saving. At all events, if the builders of automobiles want steel with low carbon, they must decide for themselves as to the reasons. If low carbon is desirable, the steel so constituted can be had from abroad if not from the home mills. Since mild steel (steel with very low carbon) will stand even abuse in the heat treatment thereof, it is a good product to consider, even if alloying elements have to be introduced to impart the desired "tensility." It is the low carbon steel that has to be used if "cementing" is resorted to, and it is certainly possible to realize great dynamic ability in the absence of carbon. It is a question if dynamic ability is characteristic of any grade of steel, if the carbon content is pronounced, even though the steel be alloyed.

The claims of dynamic ability for vanadium steel, for illustration, do not hold at all, if the carbon is high; who will say it is not the absence of carbon rather than the presence of vanadium that imparts the so-called dynamic qualities? At all events, when the smoke of battle lifts, the author is of the opinion that the "old wagon maker" with his (very low carbon) iron, came very near to knowing what constituted the maximum endurance, the greatest ease of working and the uniformity so much to be desired in work of the sort under discussion.

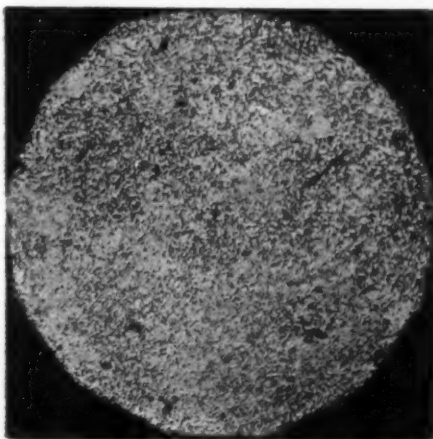


Fig. 2—Micro-photo of normal steel.

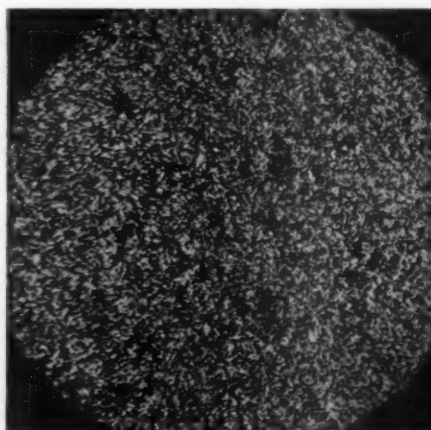


Fig. 3—Micro-photo of annealed steel.

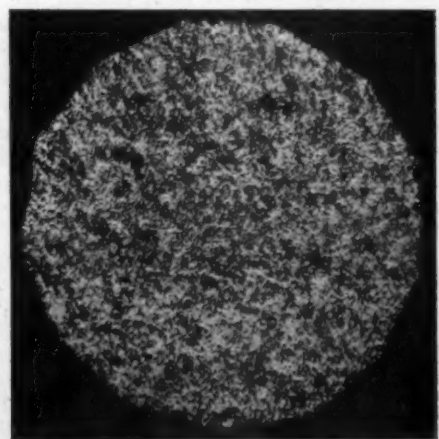


Fig. 4—Micro-photo of tempered steel.

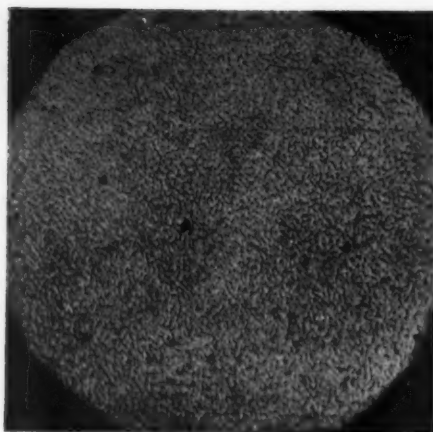


Fig. 5—Micro-photo of core of cemented steel.

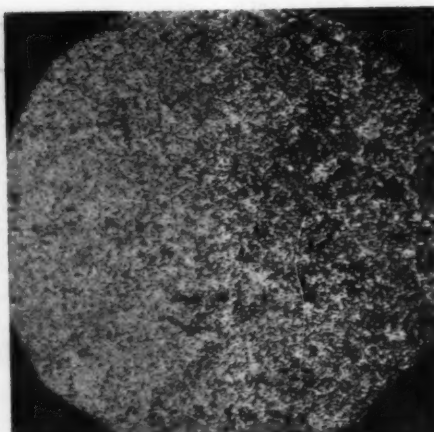


Fig. 6—Micro-photo of armor of cemented steel.

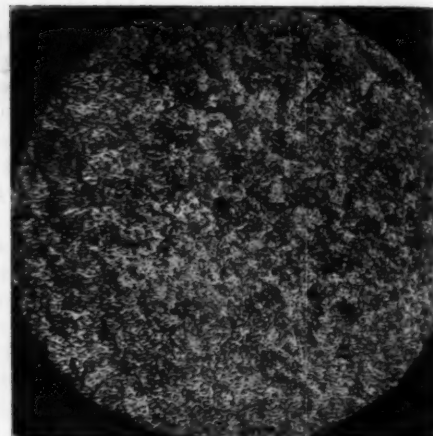


Fig. 7—Micro-photo of special treatment of steel.

The illustrations accompanying this article are micro-photographs of "Bishop" soft chrome nickel steel, and are offered with the idea of showing by means of micro-photographs that in heat treating steel does undergo structural changes, and it is reasonable to assume that the physical properties will be influenced by these changes. As a matter of fact there is a marked difference in the physical properties of the steel according as the structure is altered by the treatment, as the following tabulation will show:

Fig. 1. The properties of fabrication.

Fig. 2. Normal steel, the physical properties of which are as follows:

Tensile strength, 110,000 per square inch;  
Elastic limit, 100,000 per square inch;  
Elongation, 20 per cent. in 2 inches;  
Reduction of area, 60 per cent.

Fig. 3. Annealed steel, the physical properties of which are as follows:

Tensile strength, 108,000 pounds per square inch;  
Elastic limit, 104,000 pounds per square inch;  
Elongation, 24 per cent. in 2 inches;  
Reduction of area, 69 per cent.

Fig. 4. Tempered steel, the physical properties of which are as follows:

Tensile strength, 200,000 pounds per square inch;  
Elastic limit, 164,000 pounds per square inch;

Elongation, 5 per cent. in 2 inches;

Reduction of area, 25 per cent.

Fig. 5. Core of cemented steel, the physical properties of which are as follows:

Tensile strength, 222,000 pounds per square inch;  
Elastic limit, 214,000 pounds per square inch;  
Elongation, 12 per cent. in 2 inches;  
Reduction of area, 56 per cent.

Fig. 6. Armor of cemented steel, the physical properties of which are as follows:

Tensile strength, 350,000 pounds per square inch;  
Elastic limit, 290,000 pounds per square inch;  
Elongation, 3 per cent. in 2 inches.  
Reduction of area, nominal.

Fig. 7. Special treatment, the physical properties of which are as follows:

Tensile strength, 135,000 pounds per square inch;  
Elastic limit, 120,000 pounds per square inch;  
Elongation, 18 per cent. in 2 inches;  
Reduction of area, 65 per cent.

Obviously this steel could only be worked in its annealed state and only then with machine tools of considerable rigidity, using high tungsten steel for the cutters. It is used for the most responsible parts in the absolutely high grade automobiles, and its presence to any considerable extent is the natural indication of high first cost.

## RELATIVE ADVANTAGES OF MAGNETO AND COIL

WHILE a great deal is said about hot sparks, the "fat" kind and the other kinds, and while the claim is made that the magneto is the more efficient, the fact remains that the reasoning is generally defective. The temperature of an electrical spark is fairly constant because it is the temperature due to the high resistance in the "gap" quite independent of the source of the electrical energy, be it from a battery or a magneto. The energy of the spark will depend upon the electromotive force, in the secondary circuit since,

$$W = E I \quad (1)$$

in which

$W$  = energy in watts;

$E$  = electromotive force in volts;

$I$  = intensity of the current in amperes.

The electromotive force can be just as high in the spark coil circuit as in the magneto circuit. It is not in this relation, then, that a difference will be found in the efficiency of the methods. The actual heat dissipated in the gap at the spark plug will depend upon the actual dissipation of energy, and this in turn depends upon the length of the gaps in a given atmosphere and also the electromotive force; since the current in

amperes:

$$I = \frac{E}{R} \quad (2)$$

when,

$R$  = resistance in ohms, or, the virtual equivalent;

$I$  and  $E$  to be taken as in (1).

This heat, as above expressed, may be reduced to (small) calories as follows:

$$H = E I t \times 0.24 \quad (3)$$

$$= I^2 R t \times 0.24 \quad (4)$$

when

$H$  = the heat equivalent in small calories;

$t$  = time in seconds;

$I$ ,  $E$  and  $R$  to be taken as above.

This expression is more comprehensive because it does take time into account, and it does deal with the heat directly, rather than the instantaneous value of the electrical energy in watts. At all events, irrespective of the mode of procedure, it is plain to be seen that no condition thus far shows any advantage in one mode of generating the electrical energy over the other. What is to be seen is that the spark is of equal competence.



# MANLY HYDRAULIC VARIABLE SPEED TRANSMISSION

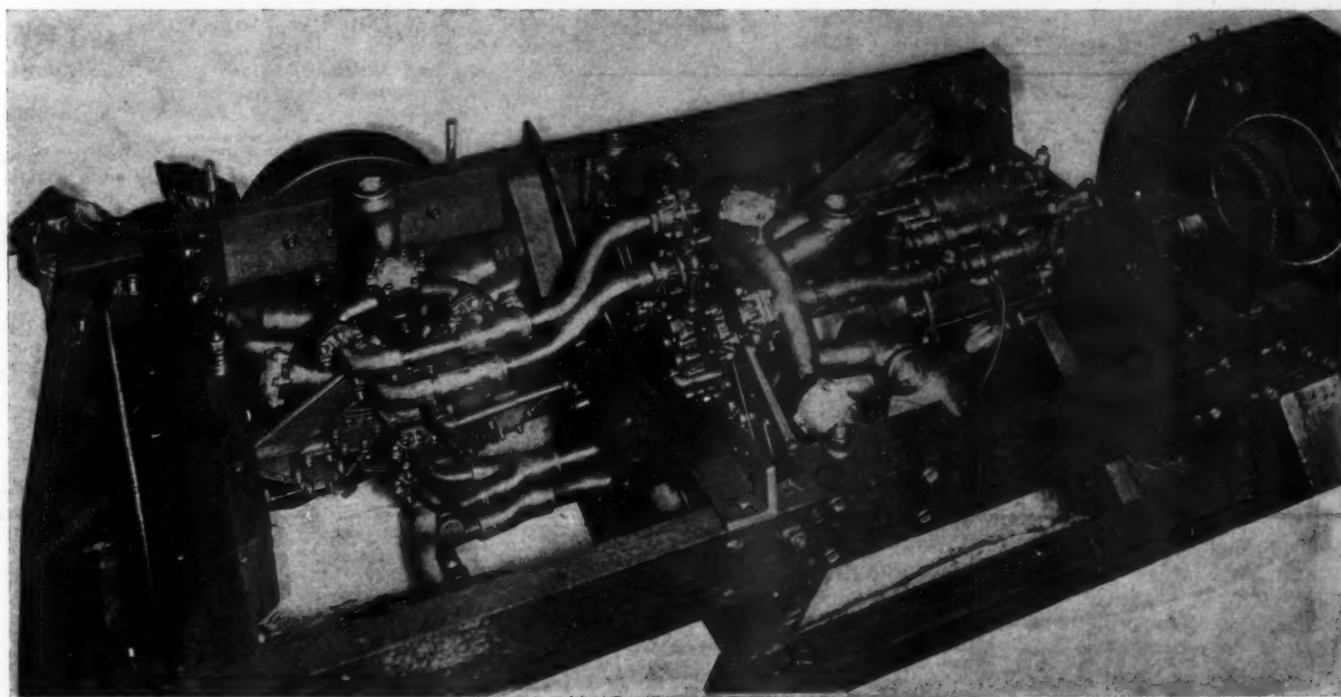
By THOS. J. FAY.

**I**N view of the incongruities in the sliding gear, and the limited number of speed changes in the planetary types, it is no wonder that inventors keep at it with a view to evolving some plan more in keeping with what they think ought to obtain for the purpose. The "Manly Drive," so called, belongs to the class of transmissions said to be more in keeping with the requirements, and that it is well worth looking at and pondering over is assured from its up-to-date performances. The Manly drive does work very nicely, and it does afford a most perfect control.

The system may seem to be complicated, as viewed by the novice, whereas the contrary is true. Fig. 1 shows the system as it appeared the other day when the writer was enabled to examine and run a test. Besides the test on an improved equipment of the kind, an earlier experimental type was examined in a truck where it has been doing good work for upwards of a year under

constant speed. This is also true if a sliding gear is used, in so far as speed changes are taken advantage of. In the sliding gear, however, if the motor is run at a variable speed instead of sliding the gears, as is oftentimes the case, the motor ability will fall off, since the torque of a motor is not increasing with decreasing speed. The Manly drive has certain other novel features that are worth taking into account. To go into reverse, the liquid is circulated in reverse. To stop, the valves are thrown to neutral, and the system locks. Result, brakes are not necessary with this drive.

In this system the differential gear is not used at all, because two hydraulic motors are employed, one on each driving wheel, that is to say, connected therewith. The whole idea, then, consists of as many hydraulic motors as there are wheels to deliver power to and a valve system that regulates the flow of the fluid, which is ordinary mineral oil with a low congealing point and low



Manly Hydraulic Transmission System, Showing Control and Motor.

a gross load of 8,500 pounds. Inventor Chas. M. Manly states the truck in question has been making the rounds in the streets of New York during this period.

## The Reported Performance of the Truck.

Observation, during some 3,000 miles, led to the conclusion that a truck in which many speed variations could be effected would result in tire economy, and in the case in point the tires, which were 34 x 4 inches, front and rear, wore down less than 3-16 inch. The speeds available were all degrees from a slow crawl to the maximum possible in view of the highest power of the motor. In changing the speed there is no positive increment, since the result is due to the alteration in the volume of liquid (oil) that is actually pumped, or, circulated.

To change speed it is not necessary to alter the speed of the motor, and as a result the motor is allowed to run at its best power speed all the time. Power multiplied by speed is a constant, hence the ability of the power plant is not reduced under any conditions of operation. In other words, as the speed of the car is reduced, the torque of the transmission increases, if necessary, in the same ratio, and the motor is allowed to run at a

viscosity. Plainly, the question of lubrication does not enter into the problem, and as to noise, there is very little or none, since the oil dampens all noise tendencies. The motive power is by way of an automobile motor of the internal combustion type (a gasoline motor) placed in front in the usual way, and in all respects conforming to regular standard practice. The control system consists of one lever, not counting the steering wheel for the car. The one control lever is conveniently located at the side, and by its movement all speed changes are made.

## The Pressure of the Transmission Oil.

The lowest pressure is about 200 pounds per square inch, and as the speed is lowered the pressure increases. The highest pressure is about 2,400 pounds per square inch, and, as might be expected, the system of valves and the hydraulic motors which handle this wide range of pressures, must be very well designed and constructed. Fine grades of bronze are used throughout, and by an ingenious construction, as is shown in the illustration. Of leakage there seems to be very little, if any, and apparently the methods of packing are so simple and secure as to assure good performance, and no very considerable trouble from the high pressures that must, at times, obtain.

The indications thus far would seem to show an efficiency of about 85 per cent. (mechanical) of the power applied to the transmission, that per cent. being delivered to the wheels under the best conditions. This is something to take into account in slow-moving vehicle work, in which a double gear reduction would make inroads in the mechanical efficiency. If this system shows a high efficiency under the best conditions, it also does extremely well under more adverse conditions, since the liquids do not have to move so fast, and the friction losses of the liquid will be on the decrease as the other losses begin to mount up. In several ways there are compensating factors that seem to augur for good.

There is one other point to be considered before the subject is dropped, i. e., in electric automobiles it is a fact that the torque at low speeds is very high and favorable, as is generally recognized. In this system the same advantage is available, but to a more marked degree, since the motor will have a greater power rating than is usually available in electrical drives in view of the limits imposed by batteries. With motors of considerable power and the hydraulic transmission, in which the torque increases as the speed decreases, it is plain to be seen that the starting torque can be very high, indeed.

#### Some Factors for Commercial Success.

In commercial work it is generally well understood that the personal equation is a matter of considerable moment. "Fool-proofness" has been the dream of those whose experience with commercial automobiles enables them to judge of the damage that can be inflicted on a machine by a man of just a little experience armed with a monkey-wrench and a screw-driver. In the hydraulic transmission system of the subject, the whole matter is reduced to its simplest form, in that the man (so armed) will be defeated, for he cannot find a use for the tools. Everything is housed in, the parts are simple and strong, and they cannot be the victims of dirt and grit, and they are profusely lubricated.

The Manly drive will be exploited by the Manly Drive Company, Whitehall building, New York City, and its future performance will be watched with considerable interest.

#### MICHIGAN'S PROGRESS IN ROADS BUILDING.

LANSING, MICH., Dec. 5.—The annual report of the Michigan Highway Commissioner, which will shortly be made to the Governor, will show that during the three and one-half years just passed, the period of the present incumbent's term of office, 326 miles of new road—macadam and gravel—have been built. This is believed to be a better showing than any other State in the Union can make. These roads have been inspected and their construction supervised by the highway department at a cost of less than 1 per cent. Of the total mileage completed, 153 miles are macadam roads, 140 miles gravel, 3.6 miles are of stone bottom with gravel top, 2.5 miles gravel bottom and stone top, and 1 mile of low-grade gravel road.

The commissioner states that the larger part of the applications that come in for State aid are for gravel roads instead of macadam. He states that he has been trying to induce road districts to put in gravel instead of macadam, as the former are not only cheaper, but are not worn so much by automobiles as are the macadam roads. The State has paid during this period \$228,215 as awards in assisting in building new roads.

#### NEW ORLEANS TO HAVE TAXICABS.

NEW ORLEANS, Dec. 5.—New Orleans is to have taxicabs, being the first city in the South to have them. Announcement was recently made of the formation of the New Orleans Taxicab Company. Application has been made for a charter, and the company expects to be in full operation by January 1 with part of its taxicabs running by December 15.

The new company, which was organized by W. E. Woodward, of New York, and who is identified with similar companies in New York, Boston, and three other cities, is capitalized at \$200,000. One hundred taxicabs will be operated.

## THE AUTOMOBILE CALENDAR. AMERICAN.

### Shows and Meetings.

- Dec. 31-Jan. 7.....—New York City, Grand Central Palace, Ninth Annual Automobile Show, conducted by the American Motor Car Manufacturers' Association, with Exhibits by the Importers' Automobile Salon, Inc., Alfred Reeves, General Manager, 29 West 42d St.
- Jan. 5.....—New York City, Fourth Annual Meeting Society of Automobile Engineers. (Will adjourn until January 19 after opening session.)
- Jan. 16-23.....—New York City, Madison Square Garden, Ninth Annual National Show of the Association of Licensed Automobile Manufacturers. M. L. Downs, Secretary, 7 West 42d St., New York City.
- Jan. 25-30.....—Detroit, Light Guard Armory, Seventh Annual Automobile Show, Tri-State Automobile Dealers' Association.
- Jan. 27-Feb. 3.....—Philadelphia, Second Regiment Armory, Eighth Annual Show, Philadelphia Automobile Trade Association.
- Feb. 6-13.....—Chicago Coliseum and First Regiment Armory, Eighth Annual National Exhibition, National Association of Automobile Manufacturers. S. A. Miles, Manager, 7 East 42d St., New York.
- Feb. 15-20.....—St. Louis, Mo., Annual Show, St. Louis Dealers and Manufacturing Association.
- Feb. 15-20.....—Detroit, Wayne Pavilion, Annual Show, Detroit Automobile Dealers' Association.
- Feb. 15-20.....—Cleveland, First Regiment Armory, Annual Show, Cleveland Automobile Dealers' Company.
- Mar. 6-13.....—Boston, Mechanics Building, Seventh Annual Automobile Show, Boston Automobile Dealers' Association. Chester I. Campbell, Manager, 5 Park Square.
- Mar. 27-Apr. 3.....—Pittsburg, Duquesne Garden, Automobile Show, Pittsburg Automobile Dealers' Association.

### Races, Hill-Climbs, Etc.

- Dec. 8.....—Worcester, Mass., 200-Mile Endurance Run of the Worcester Automobile Club.
- Jan. 1-2.....—Philadelphia, Two-day New Year's Run of the Quaker City Motor Club.

## FOREIGN.

### Shows.

- Nov. 28-Dec. 13.....—Paris, Eleventh Annual Salon de l'Automobile, Grand Palais, Automobile Club of France (Pleasure Vehicles, etc.).
- Dec. 20-28.....—London, Stanley Show, Agricultural Hall.
- Dec. 22-29.....—Paris, Eleventh Annual Salon de l'Automobile. (Commercial Vehicles, etc.).

## CARRIAGE CO. TO MAKE COMMERCIAL CARS.

YORK, PA., Dec. 5.—A new feature is in evidence for York's automobile industry. The Martin Carriage Company, one of the largest manufacturing establishments of the vehicle in the State, will in the near future begin the manufacture of gasoline commercial motor wagons. Such a move has long been contemplated, but never completely launched until recently, when by unanimous vote of the officers of the company the work was authorized. The new line will consist of all vehicles used in the commercial world for delivery and transfer purposes and will be equipped with engines made for the Martin company by another concern.

It is the opinion of the officers of the company that gasoline or electric motive power is destined to take the place of horses in the commercial world, especially in the larger cities. In expressing their views the officers stated that the automobile will not displace the horse in the country for a long time.

## ANTI-AUTO LAW WILL STAND.

OTTAWA, Dec. 1.—According to the report of the committee of the Privy Council, approved by the Governor-General of Canada, the anti-automobile act passed at the last session of the Prince Edward Island Legislature has been declared within the power of the provincial Legislature to enact. A copy of the report has been sent to Lieut.-Gov. McKinnon at Charlottetown.



## LETTERS INTERESTING AND INSTRUCTIVE

### IMPORTANT DETAILS OF DESIGN IN CYLINDERS.

Editor THE AUTOMOBILE:

[1,664.]—Being a subscriber, I would like to know the advantage claimed for cylinders cast in pairs over cylinders cast singly, or in one block. Please explain the auxiliary exhaust. Also please state which is the best, a small compression space (that is, a high compression) or a larger compression space, or moderate compression. The reason I ask is that if the compression is high, the spark would jump with more difficulty than under low compression. Also, if the compression is weaker, it would take less energy to again compress the gas. On the other hand, a high compression is more powerful; so please tell me and give reason which is best.

C. L.

Tiffin, Ohio.

If cylinders are cast in pairs the intake and exhaust manifolds will be more simple, and the crankshaft will be of the three-bearing kind. If the cylinders are cast *en bloc* a two-bearing crankshaft can be used, and the intake and exhaust manifolds will be the most simple. Auxiliary exhaust ports are by way of a better scavenging of the cylinders. In relation to the compression, it is better to have the same neither very high, nor especially low. Modern sparking equipment is capable of delivering a spark under the most severe conditions possible to impose, so that there is no trouble from that point of view. If the compression is too high, the motor will "knock" under certain conditions, as on a grade, if it is long. On the other hand, if the compression is low the power will be low as well; possibly the compression might be about 80 pounds per square inch absolute. Preignition will follow if the compression is in near proximity to 95 pounds per square inch. With a lower compression, when the cylinders become carbonized, if they do, preignition will be eminent. Within certain limits the power does not seem to be affected by changes in compression. In relation to this phase of the question, there is the speed to be considered: the higher the compression the faster will the motor run, all other conditions agreeable. In fine, it seems out of the question to arbitrarily settle the question, since the details of design will influence the situation.

### METRIC THREADS FOR PLUGS GIVE TROUBLE.

Editor THE AUTOMOBILE:

[1,665.]—In the course of work which I am doing I found it necessary to tap a cast iron bushing with a thread in order to fit a metric spark plug. I started to do this work on a lathe, but found it was a peculiarly odd number of threads, and I could not definitely decide how many threads there were to the inch. If you can, without inconvenience, give me this information; or, better yet, inform me where I can secure a tap for a day or so; I will be very much indebted to you.

F. C. BARTON.

Schenectady, N. Y.

A millimeter thread gauge will enable you to ascertain the metric pitch of the threads in question. The metric pitch of threads is not one to be handled in English equivalents. If you consider that in the metric system you have a certain number of threads per centimeter, in your case, you can then proceed as follows:

As, 1 inch : 1 centimeter :: 1 : 0.393704;

With this information at hand, if you have a lathe such as will enable you to make the changes, reduce the motion of the screw to conform to the above proportion. If you can introduce into the screw-cutting train two gears, one of 50 teeth and the other of 127, it will be possible to do the work, for the reason that

As, .3937 : 1 :: 50 : 127;

There will be a slight error in the proportions as given, but it will cause no trouble at all. What you probably want is an 18 millimeter French tap for the work you have to do. If you cannot get one from your supply man, the next best thing will be to proceed as above. Perhaps one of the Metropolitan importers of foreign cars can help you.

### VALUE INTEGRAL STEMS OF MUSHROOM VALVES.

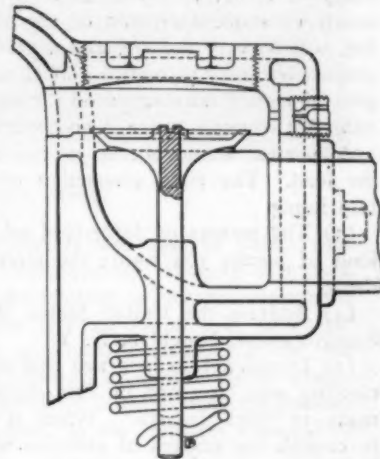
Editor THE AUTOMOBILE:

[1,666.]—I have a motor in which the valves are made of two parts, i. e., high nickel steel mushrooms with inserted carbon steel stems. Everything seems to be all right excepting that occasionally a stem drops out of the mushroom and the consequences are hardly necessary to describe. At all events, I am curious to know why the stems depart from the mushroom.

XYZ.

New York City.

In the majority of cases the troubles related are conspicuous for their absence. The process indicates a percentage of this sort of trouble, because the high temperature on the exhaust side at any rate, will introduce variable conditions of expansion, since the metal of the stem and of the head is not identical, and again, it is impossible for machinists to invariably attain the same degree of tightness of the fit. It is customary in this class of work to "rivet over" in the manner as shown in the illustration here given. The expectation from which may be briefly stated as follows: The static pull of the spring is, say, 42 pounds, which spring is made 2 inches in diameter and 5 wraps of a 3-16 inch diameter wire. If the shock imparted to the sheer section of the riveted over portion is equal to the static pull, then the shearing moment on the riveted over section will be 84 pounds. The riveted over section will stand 99 pounds in this particular case, if the work is as well done as the section drawing indicates, but the difference between 84 pounds initial shearing impetus and 99 pounds actual shearing ability is not sufficient to compensate for inequalities in degrees of perfection of the workmanship in practice.



Section Through Mushroom.

### THE INVENTIVE MIND WORKS, ANYWAY.

Editor THE AUTOMOBILE:

[1,667.]—I am doing a life sentence for murder—it has an ugly sound—but it was only a rude duel. I have been in prison since October 13, 1900, and during the whole time I have made automobile construction a study. Of the several devices I have invented is one I send you, and hope you will find merit in it and do something by way of helping me procure a patent on the same. It is a ball and socket steering hub.

ORRIN DE LOSS.

Macalester, Okla.

Your communication shows a disposition on your part to try to do too many things at one time. You cannot be a success at automobiles, flying machines and other things besides. With so much time on your hands you should be able to make a success of some one thing.

### SEVERAL FEATURES OF DESIGN TO CONSIDER.

Editor THE AUTOMOBILE:

[1,668.]—Any information you can give me on the following will be greatly appreciated:

1. What is the rim inside diameter of a tire 36 by 4 inches, and a tire 34 by 4 inches?
2. Is there any reason for not making the front springs of a car level or flat? The only cars I can find with flat springs are the Thomas taxicabs and the 1909 Lozier. The makers who use front springs with the greatest curve make the rear ones flat, or very nearly so. Why? Are full elliptic springs with scrolls at each end suitable for a touring car weighing about 3,000 pounds empty?

I have noticed that some makers attach full elliptics to the frame rigidly, while others use a kind of pivot. Which would you advise using?

3. Can you tell me where I can get a few small plunger pumps, cam operated? I have watched your advertising columns for nearly two months and have been unable to find any one who makes them.

4. Can you tell me the address of the MacAdamite Company, of Brooklyn, N. Y.? They make castings similar to aluminum.

5. Do you think that a multiple disc clutch having phosphor bronze discs with cork inserts keyed to the flywheel and steel discs keyed to the driven shaft, will work well? What would be the smallest diameter possible? Number of discs? About what spring pressure for clutch of a 50-60-horsepower two-cycle motor?

MORTON E. MYERS.

New York City.

(1) Depends upon the tires to be used; consult the tire makers.

(2) Flat springs are more flexible. Some designers avoid flexibility in front; they can do so with safety since the load is nearly constant, consisting of the motor, etc. Rear springs, if flat, will be very flexible, and a preference for flexibility is expressed by many autoists. Full elliptic (scroll) springs seem to give very good satisfaction on the cars so provided; it is experience that counts. There is no objection to the rigid connection; 3,000 pounds would not be excessive for the springs made for the load. The rigid connection eliminates a joint; grit gets into joints.

(3) The makers of force-feed oil systems probably make the kind of pumps you want; the sizes might be too small. Try them.

(4) Address the United States McAdamite Metal Company, Rapelye street, Brooklyn, N. Y.

(5) It was not so long ago that the question of multiple disc clutches was discussed in THE AUTOMOBILE, and reference was made to "cork inserts." When it comes to specific designs, to consult the makers of clutches will be the safest way. See THE AUTOMOBILE, page 569, October 22, 1908. The spring pressure for a clutch to use on a 50-60-horsepower motor would have to be determined considering the clutch.

#### DOES NOT DEPEND SO MUCH ON DIMENSIONS.

Editor THE AUTOMOBILE:

[1,669.]—Which motor is the best, taking for granted they are the same, except the bore and stroke: One motor weighs 265 pounds, bore  $4\frac{1}{4}$  inches, stroke  $4\frac{1}{2}$  inches, and claimed to develop 12-horsepower. Another one is 5-inch bore and 4-inch stroke, also claimed to develop 12-horsepower (both at 1,000 r. p. m.); weight 225 pounds. Inlet valves  $1\frac{1}{4}$  inch, exhaust  $1\frac{1}{2}$  inch on the first motor, and 1 11-16-inch inlet valves and 1 11-16-inch exhaust valves on the last motor. Which do you consider the best, and which will last the longer?

SUBSCRIBER.

Galva, Ill.

Of two motors, the best will be the one of the most harmonious design, suitable materials and accuracy of construction. At a distance, these matters cannot be passed upon. In general, the largest piston displacement is the most likely to deliver the rated power, if the design is confined to relations within the known quantities. On the other hand, the motor with the largest bore, with, say, a crankshaft of inferior material, might be a very bad selection.

#### THE KNOCK IS IN ONE CYLINDER ONLY.

Editor THE AUTOMOBILE:

[1,670.]—In my Maxwell two-cylinder touring car there is a decided knock in the left cylinder only. All bearings and connections are in good shape. It has been suggested that a loose fitting piston may be the cause. Will you kindly suggest the proper remedy, if there is one short of replacement?

Spartanburg, S. C.

W. B. W. HOWE, A.M.

If the timer is out of order the knock will be due to that fact. Possibly one cylinder has been fed an excess of lubricating oil and as a result a growth of carbon is there to make itself felt. If the knock was not always present, it is not likely that a loose piston is the answer. If the valve settings have become deranged, it is something to take into account. Then, again, it is just possible that the water circulation around the head of the knocking side is in bad shape.

#### CASTOR OIL ADVOCATES COME TO THE FRONT.

Editor THE AUTOMOBILE:

[1,671.]—On page 703 of your issue, November 19, you have a heading, "Castor Oil Lubrication Will Grow." Being from the "tall timber," I would like to get some information in regard to castor oil lubrication. If it is better than mineral oil, why is it better, cost not considered?

OSMOND H. BARRINGER.

Charlotte, N. C.

Thus far castor oil has been limited in its use to the fastest racing cars abroad, from all accounts. Its excessive cost would bar it from general use.

#### LOST MOTION IN SOLID BUSHINGS.

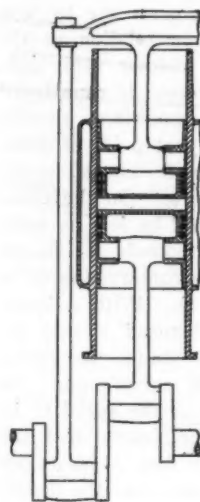
Editor THE AUTOMOBILE:

[1,672.]—Please tell me if by cutting through the main bearings of my crankshaft with a hack saw, and then introducing shims, to make up for the difference, would I not be making the bearings (nearly) as good as new?

WOULD-BE SUBSCRIBER.

South Braintree, Mass.

Depends upon how well the work is done, and, further, upon the extent to which you scrape the surfaces to a fit.



Two-Piston Motor.

#### THE GOBRON-BRILLIE MOTOR.

Editor THE AUTOMOBILE:

[1,673.]—In your answer to the "Question Mark," letter No. 1,651, you have apparently confused the old Gobron-Brillie motor with some of the more recent creations which inventors are endeavoring to foist upon us. The Gobron-Brillie has two separate pistons in each cylinder which work in opposite directions, the explosion taking place between them. The pistons are connected to cranks at 180 degrees to each other. The cylinders are cast in pairs, and the pistons in each pair work together; the upper piston connecting rods are joined together by a beam across the top. The drawing shows the arrangement more plainly than any description. The advantage claimed for this construction is the more rapid expansion of the gas, allowing a larger proportion of its energy to be utilized.

G. H. GODLEY.

Cambridge, Mass.

Drawing in No. 1651 referred to illustrated the double piston as requested.

#### WELL-PUT RÉSUMÉ OF THE CHAIN SITUATION.

Editor THE AUTOMOBILE:

[1,674.]—I read with interest the remarks of Mr. Fergusson, quoted in The Automobile of November 26. He states: "Two tendencies in construction stand out prominently above all others. The first is the wide adoption of the shaft drive among the makers who have heretofore produced none but chain-driven cars . . ."

In discussing the general tendencies shown at the motor car show in London, the "Autocar" states: "The chain drive is still very far from dead, and now that silent chains are being used, there is no doubt that much is yet to be said for it, particularly in the case of the large heavy bodied cars. This is, of course, on the assumption that the chains are properly enclosed in oil-tight chain cases, which, by the way, in some instances, by means of their framework or otherwise, are made to do their duty as radius rods. Almost all the makers who have had long experience with chain and chainless cars still believe most emphatically in the chain drive; at any rate, for the larger types, on account of its flexibility and the reduction of the unsprung load upon the rear tires."

I think that the above quotation shows clearly that there has not been a wide adoption of the shaft drive among makers who have heretofore produced none but chain-driven cars.

New York City.

JOHN JAY IDE.

#### AN INVENTOR LOOKING FOR BACKING.

Editor THE AUTOMOBILE:

[1,675.]—I have invented improvements in automobiles which will revolutionize the industry. I have no capital. Can you tell me how to realize for myself as well as for others, or shall I let them die a natural death? You know the old maxim: "A burnt child dreads the fire."

FRANK HUTCHISON.

Herndon, Va.

Death never yet overtook a principle. If you think you have something revolutionary, push it and generate a revolution.





The Leader of the Gaeth for '09 is Type XX, illustration of which is herewith given.

RECOGNIZING the extent to which the automobile trade will flourish under the conditions at present reflected for the coming year, the Gaeth Automobile Company, of Cleveland, has completed preparations and routine such as will enable it to cope with the situation. Realizing the importance of the commercial situation, it has brought the delivery wagon question to a decided state of perfection, and the Gaeth line will therefore include four cars besides a delivery wagon; namely, Type XX, which is a modernization of the former Type XV; a new short couple body, the Gaeth tourabout, which replaces the Gaeth roadster of 1908 fame, and a limousine. The Gaeth products as above scheduled can very well be described as follows, in view of the standardized power plant and the conventional chassis of well and favorably known characteristics.

**The Power Plant.**—Referring to Fig. 1, it is to note the exhaust side of the motor, showing the magneto nested in an accessible position, taking its power from a housed-in driving shaft. The exhaust manifold of very liberal area, easy curves, and getatable holding bolts, is clearly shown. The aluminum crankcase flares out to the chassis frame, thus eliminating the need of an under pan, while at the same time adding strength to the crankcase itself. Fig. 2, of the other side of the motor, brings into view the carbureter, intake, valve motion, and the details of the air fan. In both illustrations of the motor, the water piping is shown of very liberal area, emanating from the top of the cylinders, and so designed as to positively elim-

inate steam pockets. The cylinders are cast in pairs, with integral water jackets of a selected grade of gray cast iron, and so designed as to facilitate cooling by the thermo-syphon system, in which a honeycomb type of radiator is employed. The cylinder flanging to the aluminum crankcase is of the most substantial sort, and provision has been made to assure the positive setting of cores, perfectly uniform wall thicknesses, and ease of cleaning, with a view to the complete removal of core, sand, etc.

**Details of Ignition, Cam Shaft and Timing.**—The low tension make and break system of ignition is used, which will permit of starting on the spark. It is a simple and efficient mechanism (Fig. 3), and displaces storage batteries, spark coils, commutators, and complicated wiring. The device consists of a single vertical shaft, rising up at right side of motor between the cylinders. Attached to the base of the shaft is a spiral gear, meshing into and driven by a similar gear attached to the intake valve cam shaft with a key, which admits of sliding the gear back and forth along the shaft. A two-piece bronze sleeve is fastened over the cam shaft and bears in a groove in the end of the sliding gear. This sleeve is connected with the spark lever on the steering wheel, and by a movement of the lever the sleeve and gear are slid along the shaft and produce the advancing or retarding spark by changing the relative rotation of the two shafts. To the top of the vertical shaft is attached a pair of small cranks, connected to which—in a horizontal posi-

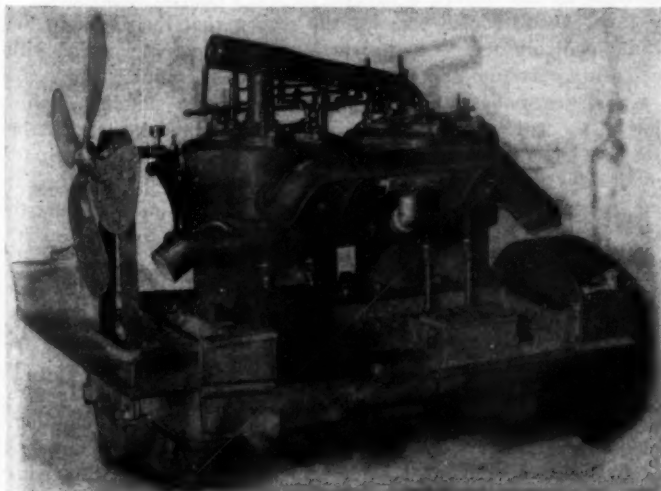


Fig. 1.—Exhaust side of motor, showing magneto.

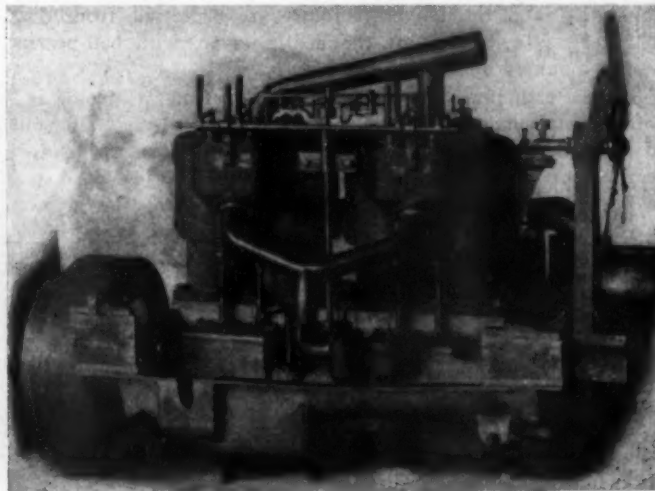
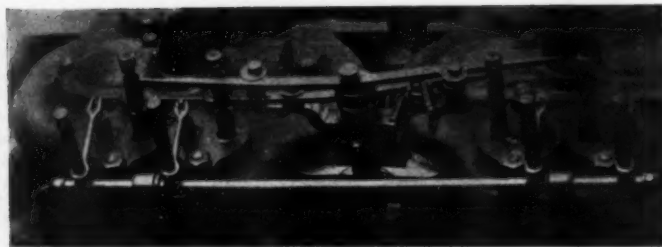


Fig. 2.—Carbureter side of the Gaeth motor.



Top of Motor, Showing Make and Break Ignition System.

tion—are four push rods, whose action trips the contact arm of the igniter. This tripping action, and thus the timing of the engine also, is regulated by means of four small eccentrics, against which the rods are held by springs. The igniter has a moving member or contact arm, which is brought into contact by means of the horizontal push rods, with a stationary insulated member connected with a Simms-Bosch magneto. Following the making of contact or closing of the circuit, a spring throws back the contact arm, and the circuit being thus broken, a heavy spark is induced between the special alloy points of each member.

**Carbureter.**—The Gaeth carbureter has a remarkably low fuel consumption and produces the highest efficiency of the motor. It has a three-fold control by a single movement of a one-piece throttle. The air entering from below, the gasoline entering, and the mixture passing to the motor are all controlled simultaneously by the lever on the steering wheel. The carbureter is of the separate float chamber style, and its mixing chamber is a vertical cylindrical space completely filled by a revolving needle valve and throttle. This throttle has in its base two radial "V"-shaped openings for regulating the air entrance. In its sides there is an opening of a peculiar shape for recovering the exit of the mixture. A part revolution of this throttle also effects a part movement of the needle in the nozzle, so that with a larger entrance there is a greater flow of gasoline. No auxiliary air valves are used, and it is possible to set the gasoline valve for a low running speed and go up to the highest speed without further regulating.

**Features of Clutch and Transmission.**—The Gaeth clutch is a study in simplicity, and belongs to the contracting band genera in which a flange cast integral with the flywheel affords the friction surface, over which the leather-faced band contracts in obedience to the pressure applied to a foot pedal. From the clutch to the sliding gear is a short and substantial drive, while the sliding gear itself affords three forward speeds and reverse, taking advantage of the progressive system. The speed change lever is fitted with an automatic position finder, and eliminates any chance of "shooting by." The gears are thus protected even in the hands of a clumsy operator. From the transmission gear to the live rear axle the propeller shaft is normally without angularity, and the universal joints are protected from dust. The rear axle itself is of the floating type, with ball-bearing wheels mounted on the axle casing.

**Some Pertinent Chassis Features.**—The chassis frame is a conventional channel section of pressed steel, adequate in point of strength, free from any offset. This frame is suspended on semi-elliptic springs, front and rear, of silico-manganese steel, taking advantage of the requisite number of comparatively thin leaves or plates, hence the springs are long, flat, and flexible. They are enormously strong for the work, and the periodicity of the body oscillations is fixed within the limits that assure easy riding qualities. The spring linkages and other chassis frame details are in accord with the refined design in general.

The steering gear is of the nut and screw type, designed to be irreversible. A dustproof housing is provided, and the working members are submerged in grease. The steering wheel is without lost motion, and after long service such lost motion as may be due to legitimate wear can be eliminated by the adjustments afforded.

**The Gaeth Products Commercially.**—The types of bodies

as previously mentioned are all the most appropriate, considering the respective classes of service for which they are intended. With a view to more clearly indicate the general appearance of the Gaeth the preceding illustration on page 819 shows among other things a large-diameter steering wheel in nice relation to the driver's seat. Also a utility wind shield, and mud guards that serve the purpose extremely well, indeed. It will be noticed that the cooler is on the center line of the front axle, and the acetylene lamps are set back sufficiently far to be protected. It will also be noticed that the side levers are straight, and in many other respects the appropriateness of the type stands out.

The road performance of the Gaeth chassis will be that due to 114-inch wheelbase and a 56-inch tread. The control of the power has been adequately enlarged upon, but mention should be made of very capable brakes of the external and internal characteristics, located on the rear wheels. The power losses are reduced to the minimum due to the fact that ball bearings are used at all points entitled to such consideration, including the front and rear wheels, so that the greater portion of the motor rated at 30 to 40 horsepower is delivered to the point of tire contact with the ground. That the motor is conservatively rated is borne out by the fact that the cylinders are 4-7-8 inches x 5 inches bore and stroke, respectively.

**Type K Delivery Wagon.**—In this case the body has a merchandise platform 44 inches wide and 67 inches long, with a clear head room of 56 inches. The wheelbase is 103 inches, thus assuring short turning radius in congested streets; a 56-inch tread will track in the street car tracks, and the front wheels are 34 inches, with 38-inch rear wheels, assuring good road performance. The single-cylinder motor is rated at 12 to 15 horsepower, belongs to the water-cooled thermo-syphon type, and is provided with a jump spark ignition, positive float feed carbureter, positive force feed oiling, and the transmission is by a planetary gear to a side-chain drive. The capacity of this delivery wagon is 2,000 pounds. The frame is angle steel on semi-elliptical springs, and the equipment consists of oil side lamps and a tool sack.

### WESTERN FARMERS ARE BUYING AUTOS.

According to the publicity department of the H. H. Franklin Manufacturing Company, the extent to which the automobile is being recognized as a necessity on the farms of the West is indicated by the fact that in central Kansas alone more than six hundred cars are owned by farmers. A dozen years ago the farmer in this region who owned an extra team and had a spring wagon had the standing of a man of means in his community. Now those who then looked covetously upon the spring wagon are driving about in automobiles. Orders for at least 100 of the gasoline vehicles for spring delivery have been placed in Kansas City and Topeka, it is estimated, and the tendency of the buyers, according to the Franklin spokesman, is to favor an air-cooled car, for the reason that the alkali in the water available acts as a destructive agent upon the metal with which it comes into contact in a water-cooled engine.

Kansas roadways are so level that they are a standing invitation to the automobilist, and this has contributed largely to the welcome given the automobile by those who live in the State. So keenly is the automobile felt to be an agricultural essential that agitation has been started both in Kansas and Missouri to have instruction given at the State agricultural colleges in the general uses and adaptabilities of the motor car. The agricultural school of Iowa at Ames has already decided to have a short winter course of instruction of this sort. The students will as a preliminary be taught the structure and operation of gasoline engines and will learn the many ways in which such an engine can be made use of to make farming easier and more profitable. Then they will be instructed in the dismantling, rebuilding and operation of motor cars so that they may become skilled operators of such vehicles, which, the State educational authorities are convinced, will perform a large part in the development of the farming interests in the next two decades.



## NEW CORBIN MAKES ITS BOW FOR 1909

By CHARLES B. HAYWARD.

NEW BRITAIN, CONN., Dec. 7.—Things are humming at the Corbin factory these days, for the first series of the water-cooled representative of the Corbin line for the coming season are now coming through. This is known as Model K-2 30-horsepower Corbin and as a touring car, roadster, or with a baby tonneau, it will list at \$2,500. It will also be made as a seven-passenger car with an increased wheelbase, and in limousine and landaulet types. When compared with its predecessor of a year ago, there is not a great deal of change in either the design or construction to be found, although in appearance the car is much better proportioned, and, to put it in more popular parlance, much more "snappy" than last year's model. At first sight, the motor appears to be substantially the same as that employed on last year's car, although an examination of its specifications reveals advances of importance in several particulars. The cylinder dimensions are 4 1/2-inch bore by 4 1/4-inch stroke, and the cylinders themselves are cast separately, the valves all being placed on the same side. The valve-operating mechanism is of the direct-thrust type, the cams bearing against roller end levers which are pivoted in outboard bearings, thus eliminating all side thrust in the valve action.

**Some Striking Motor Details.**—The timer projects above the tops of the cylinders and is perfectly easy of access; this is certainly a well-considered detail. The water piping is free from hose joints, yet, even so, the shape is such as to lend the desired "give." The exhaust manifold sweeps back with no decided bend at any point, hence heating, locally, will be entirely avoided. Moreover, the back pressure, due to bends, will be eliminated. The openings to the crankcase are large (really large enough to enable one to get at the bearings), and the means for securing the cover, while of the "quick detach" principle, lends security as well.

Drain cocks in the lower half are set at the right level, hence the amount of oil to put into the crankcase may be determined with certainty. The flywheel is marked to aid in correct timing; this is positively a good idea not always carried out. Indeed, there are a lot of good details on the Corbin, and the rope drive for the fan, for illustration, can be viewed with

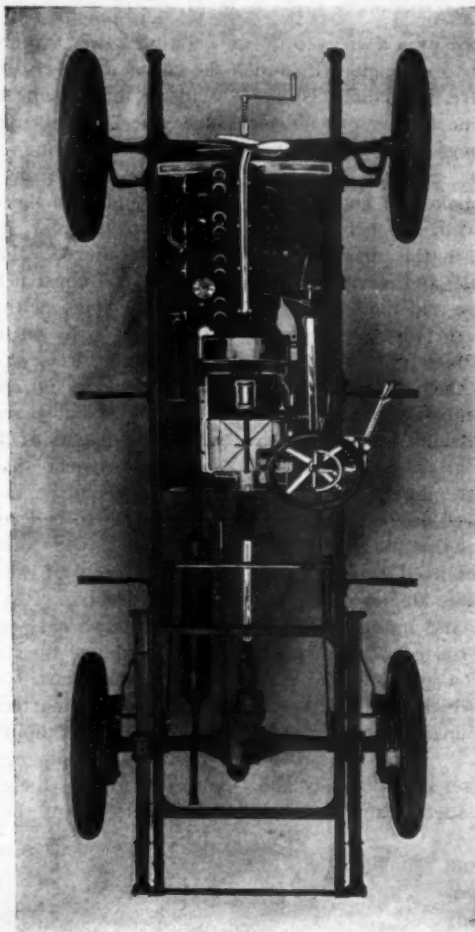
favor. It would be to overlook the things that autoists dream about to make no mention of the get-at-ability of the holding bolts of the manifolds, cylinders, and the lock nuts everywhere provided. The motor arm supports are big enough and strong, thanks to the foresight of real designers, who seem to know where to put the metal.

A somewhat unusual practice is to be found in the method of supporting the crankshaft. The central main bearings, as well as those of the camshaft, are of the plain type, while the end bearings of the crankshaft are F. & S. annular ball bearings of liberal size. Another innovation consists of the adoption of a water-jacketed carbureter, this being of Schebler make, which is too familiar to require any extended description. The inlet manifold is led between two of the cylinders, the carbureter being placed on the non-operating side of the motor, thus making it much more accessible for examination and adjustment, at the same time keeping the valve side of the motor as free as possible. The ignition system consists of the usual four-unit coil equipment, mounted on the dash and relying upon a set of storage cells as the source of current supply, and this essential of the Corbin has been improved by the adoption of the new Connecticut timer, which is a considerable step in advance of former practice in this line. The timer is placed vertically between the third and fourth cylinders and is driven by bevel gearing from the camshaft.

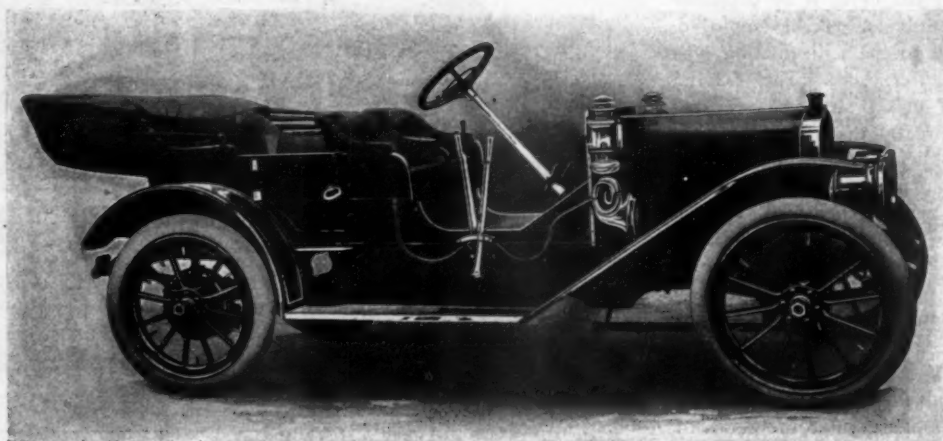
### Cooling and Other Considerations.

—Cooling is by means of a gear-driven pump, circulating the water through a honey-comb type of radiator, which, while still of the same design as last year, has been somewhat enlarged, this tending to improve the general lines of the car, besides adding to the efficiency of the motor. A further improvement of the motor itself consists in the employment of an aluminum housing to protect the fiber and bronze half-time gears at the forward end, while the motor is further protected from beneath

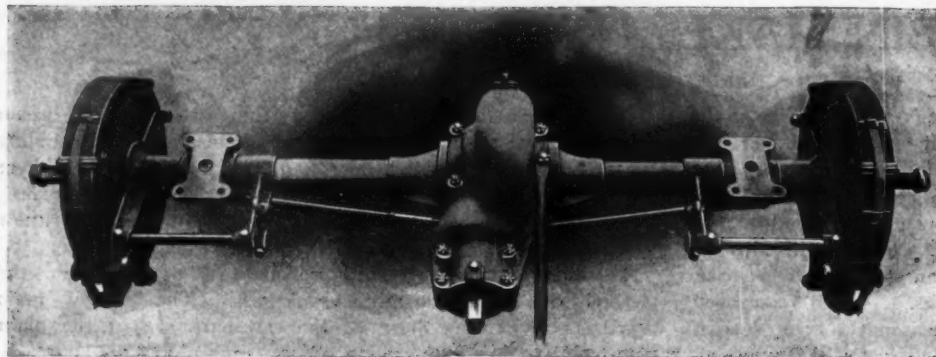
by the employment of the lower half of the crankcase as the bearing support, this being extended rearward to enclose the flywheel as well. Bolted directly to this light aluminum alloy casting is a second of similar material forming the lower half of the housing and bearing support of gear-set.



Looking Down on the Chassis.



Control Side Showing Front of Cooler on Axle Center.



Rear Axle, Showing Means for Keeping Brakes from Dragging.

The design of the clutch has been improved with a view to decreasing the amount of leverage necessary to disengage it, and this has been achieved to an extent where the clutch is extremely free acting, thus making the car one that can easily be handled by a lady. Three engaging springs hold the clutch, while its thrust is taken on a ball-bearing. Springs have also been inserted under the leather facing to make the engagement easy and positive. Taken all in all, the Corbin clutch represents an excellent example of standard practice in the shape of the leather-faced cone, which is at once simple and very reliable. Due to the method of bolting, the motor base and the support of the gear-set together, making practically a unit power-plant, only an Oldham coupling is employed between the clutch and sliding gear. This is carried on a splined shaft, instead of the usual square section. F. & S. ball-bearings are employed on the ends of the clutch disengaging fork and contribute not a little to its easy action.

To return to the motor for a moment, it may be mentioned that, following what has come to be approved standard practice in this respect, nothing but the sight feeds of the lubricating system are now to be seen on the dash, the oiler itself being located to one side of the motor and well to the rear, almost under the footboards. The oil tank holds one gallon, and its contents are fed to a small positively-driven gear pump run off an extension of the water pump shaft, which raises the oil through a four-way header to the sight feeds on the dash, from which it is distributed to the main bearings. To further facilitate lubrication, the crankshaft is drilled.

**Transmission Gear Features.**—The gear-set is of compact and light design and provides three forward speeds and reverse, selectively operated. All the gears are of high-grade steel, carefully case-hardened and ground. They are supported on F. & S. annular ball-bearings, the slide bars and their operating levers all being contained within the housing, thus protecting them and insuring ample lubrication. Final drive is by propeller shaft, two Hartford universals being employed, while the rear axle is of the semi-floating type with a spur gear differential. The driving shafts are made of nickel steel, heat-treated and are mounted directly upon annular ball-bearings, the thrust being taken by a special ball-bearing. The driving pinion itself is mounted on three annular bearings, one in front of it and two behind, a thrust bearing also being provided here as well. Instead of employing two sets of brakes of the internal expanding type, as in last year's model, the outer, or emergency brake, is now of the contracting band type.

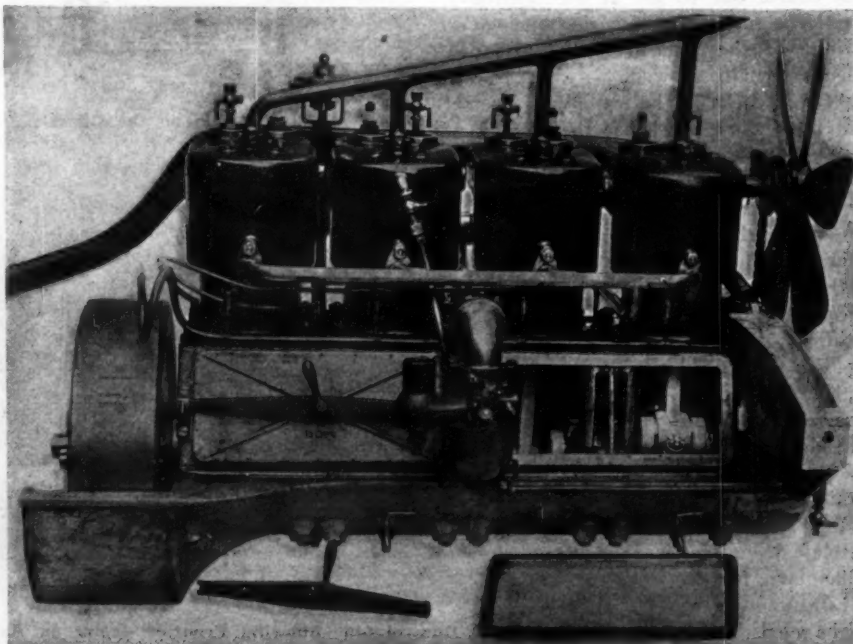
While the brake drums are large and the faces of the bands ample, even so the detail of keeping the outside bands from dragging is looked after suitably. This improvement consists of three flat springs spaced equidistant

around the periphery, held in rigid relations by arms, and so adjusted as to maintain the correct clearance at every point. The service brake is of the internal expanding type and is operated by cams; either is capable of locking the wheels without being set to anything like the limit of its capacity. The entire brake-operating mechanism is kept within the frame, both set of brakes being equalized by yokes. Castellated nuts locked by cotter pins are used throughout this part of the car, as well as on every other essential where a positive lock is required.

**Things the Buyers Want to Know.**—The wheel base of the car is 108 inches and the tread standard, in the case of the roadster, baby-tonneau, and five-passenger touring types, a 114-inch wheel base being employed on the seven-passenger touring car, the limousine and landaulet, or other closed cars of large size. The front axle is a one-piece drop-forging of I-beam section, and with the exception of the placing of the cross-steering rod to the rear, instead of before the axle as previously, has not been altered. The frame is of the usual channel section, pressed steel construction, and the steering gear is of the worm-and-sector type, neither of these having undergone any change. Suspension is by means of semi-elliptic springs all round.

The Model R air-cooled Corbin car will be continued for 1909 with practically no change whatever in the motor, which is the result of several years' study on the part of its designers, while where the chassis of the car itself is concerned, the same changes and improvement that have been recorded in the case of the Model K-2 will be carried out. The Corbin air-cooled motor is too familiar to call for any extended description.

In general, the Corbin line seems an advance on what has gone before, in spite of the previous high standard set by the designers of this product. Just what the advance means to purchasers of cars, is not so easy to put into dollars, since it is the aggregate of small things that in the long run end in the most annoyance. In the Corbin cars for 1909 the little things were brought up to a high state of perfection, and in many cases so simplified as to assure entire freedom from "mosquito" annoyances. While it is true that the main members in a car should be absolutely right, yet even so it is these members that are at first attended to. It is the little things, then, that will always stand further attention.



Carburetor Side of Engine, Showing Crankcase Openings.





THE art of driving an automobile is at once both easy and difficult, simple or complex, depending altogether from what standpoint the subject is looked upon. If driving means nothing more than steering and controlling the car on a smooth road bed the subject is certainly an easy one, quickly mastered.

But if the art of driving is taken in the full, clear sense of the word, there is much to learn, because in this latter definition is not only meant the actual guiding and control of the car, but the entire future up-keep or maintenance of the machine.

The automobile, with its delicate, sensitive, and finely adjusted mechanism, demands good care and constant attention to keep it in prime working condition, and, if neglected, we may be certain that trouble and annoyance will follow. Little things are often of greater importance than those of larger size, and as the automobile is a creature of many parts, it is the attention given to the "details" that spells success in motor handling.

It is not the writer's intention, however, to give in this article "a compendium of motor lore," but rather to mention some of the important points which ought to be considered by all autoists. Although these hints are written with the idea of helping the owner of a first car, it is possible that the more experienced "mile eater" may find at least something worth the reading.

#### "Cranking" with the Left Hand.

It has long been a mystery to the writer why autoists almost universally use the right hand for cranking the motor. As gasoline motors revolve like the hands of a watch—from right to left—there is always a possibility of injuring the hand or wrist should a back-fire occur when cranking with the right hand. And, again, the position which the body must assume when the right hand is used is awkward in the extreme and being twisted around that more force may be exerted, the balance of the body is not at all secure.

Back-pressure accidents may be averted by employing the left hand, and while makers of the Darracq and other cars have for several years advised the adoption of left-hand cranking, operators have always been slow to accept this good advice. The advantages of employing the left hand for starting purposes are many, and, once tried, will surely be adopted.

In left-hand cranking, the autoist stands squarely in front of his car, the right hand having a firm grip on the radiator or dumb iron. The handle is grasped firmly, but loosely, with the fingers of the left hand curved around the handle. As the feet are placed widely apart, a good balance of the body is assured, and, if a back-fire should occur, the elbow is not cramped, as is the case in the right-hand method, but the hand is thrown outward and upward, the loose grip permitting the fingers to fly open, and all risk of injury is done away with.

More force may also be given, as the right hand on the radiator materially assists the other member to turn the motor over quickly and without undue effort. Now that the low-tension system of ignition is becoming quite generally used, quick crank-

ing is necessary for a start, and the use of the left hand will, after a single trial, convince any driver that it is the safest and easiest way to crank.

#### Attention to Clutch Lubrication.

It is astonishing how little care many operators give to the clutch operating mechanism, which gear is, for obvious reasons, one of the most important parts of the whole car. That the several parts of the clutch at all times should be well lubricated is self-evident, as this mechanism is in almost constant use in throwing in and out the speed gears. In some makes of cars using clutches of the multiple-disc type, the mechanism is enclosed in oil-tight cases, in which case the lubrication of the clutch collars and connecting lever is automatically performed.

But in many cars using the cone clutch, and in every case where the clutch does not run in an oil bath, oiling must be done by hand. In this case, the joints of the clutch pedal, its bearings and pins, clutch rack and pinion, clutch collar (where same slides on its shaft), brass shoe of collar and thrust bearings should be kept clean and well supplied with oil.

#### Concerning Grease Lubricators.

The matter of proper grease lubrication is not always given the careful and systematic attention which the subject deserves. In fact, many drivers who give regular and painstaking attention to the engine transmission and running gear, all too often neglect to give the grease cups the same careful and thorough consideration.

Grease lubricators do not, of course, require as frequent attention as other oiling points, but they should always receive their share of attention in proportion to the work such parts are called upon to perform.

Do not be content with a superficial glance or take for granted that because you screw down the cap, the grease must necessarily feed to the bearing it is intended to lubricate. This applies especially to the lubricators on the steering pins, which should not only be kept well filled and given a daily turn or two, but the autoist should know that these vital parts are well lubricated. Lubrication means much to an automobile.

It is always a good plan to refill and screw down the cup until the lubricant is seen to ooze out of the steering socket. In this case the autoist is positive that the steering gear is well taken care of and that no trouble will be caused by insufficient lubrication of these parts.

On most cars grease cups are used to supply the lubricant—light grease—to the following parts: steering knuckles, steering cross tube, steering reach rod, shaft of water pump, commutator shaft, clutch shifting collar, journal of transmission sleeve, front and back hubs.

#### Adjusting the Spark Coil.

To properly adjust the coil is not, as many suppose, a difficult matter, but, on the contrary, is a simple operation when once it

is understood. In most coils only two adjustments are necessary, and anyone should be able to make them in a comparatively short time.

To adjust a coil, shut off the gasoline and turn the motor over by hand until the timer makes a contact with the coil needing adjusting; then turn on the switch. Next loosen the set nut until the adjusting thumb screw can be turned with the thumb and finger, and with a fine-cut file—a thin manicure file is just the thing—remove any deposit that has collected on the platinum contact points. This done, turn the screw to the right until the vibrator commences to buzz, then lock it by means of the lock or set nut.

In case the adjustment is still imperfect, the trouble will likely be found in the vibrator spring. This spring may be adjusted by first loosening the lock nut, as before described, and turn the adjusting screw to the right, or until there is a space approximately one thirty-second of an inch between the platinum points, when the armature is pressed down and against the core. Lock in position by the set nut on adjusting screw (this lock nut has a right-hand thread). Now loosen the set nut on the vibrator block and turn the adjusting screw (the upper screw in both instances) until a light contact is established between the points—then lock in position.

A light tension between the platinum points is desirable, as a stiff tension not only renders the coil less responsive, but will exhaust the batteries quicker and often causes the contact points to become pitted.

The only secret of keeping a coil in the best condition is to fool with it as little as possible and to keep the vibrator points clean and smooth, and to adjust these points neither too tight nor loose, but at a medium tension. The vibrator spring should be fairly flexible and buzz at a moderately high pitch.

Once properly adjusted, the coil should require very little attention. Once a week the vibrator and coil plates should be cleaned with a small camel's hair brush.

#### Grinding the Inlet and Exhaust Valves.

No matter what make of car you may have, it will be found necessary to grind the inlet and exhaust valves occasionally, and just how often this should be done must largely depend upon the amount of running.

When the motor begins to lose power and falls off to a noticeable extent, it is a pretty good indication of three things: faulty carburetion, improper ignition or poor compression. The latter two causes are by far the most common, and if the electrical plant has been examined and found satisfactory, the trouble clearly points to bad compression.

In case the compression seems to decrease, it is probably due to the inlet or exhaust valves sticking or not properly seating themselves, hence the leakage. The cause is due to the lubricating oil carbonizing by the extreme heat generated within the cylinder, and the remedy is to remove this crust or sooty deposit.

To find out whether there is need of grinding, the valves should be lifted out, and if not bright—as they should be—but black, pitted, or streaked with soot, there is certainly a leakage of gas, and they must be ground.

That a thorough job may be done, it is best first to take off both inlet and exhaust pipes, which enables one to clean out the valve seats and openings, and also prevents the possibility of any particle of the grinding mixture being sucked into the cylinder.

#### To Insure an Excellent Job.

To prevent any of this from falling into the cylinder while grinding the valve, a small piece of waste is tied to a length of strong string and jammed into the cylinder. If any of the mixture should happen to fall off the valve, the waste catches it, and when the grinding is done may be drawn out with the waste by means of the string.

For grinding purposes, carborundum, ground glass, and emery are all quite commonly employed, my preference being for the latter. In any case, only a finely ground cutting medium should

be used, as coarse emery will cut too deep and make the valve seats rough. Emery known as 120 is the most satisfactory for this purpose.

Don't make the mistake of using too much emery; only a very small quantity is required. A convenient way is to put a very small amount of emery in a small saucer and add a spoonful or two of kerosene (don't use gasoline) to make a thin, watery paste. A few drops of lubricating oil should then be added to give the mixture a little more body.

Remember that a few grains of emery and plenty of kerosene and cylinder oil will not only do a smoother job, but do it much quicker than a thick emery paste. When the waste is in place, put a small quantity of the grinding mixture on the bevel face of the valve and by means of a screw-driver (blade in slot of valve) carefully grind the valve by rotating it in its own seat in the cylinder.

Don't turn the valve in one direction only, but lift it out of its seat frequently, and turn it first one way, then another. The reason for lifting it clear of the seat is to prevent any foreign substance which may get into the emery from injuring and scoring the seat or valve. No greater force than is necessary to rotate the valve in its seat need be used, and by frequently lifting the valve and reversing the grinding motion, the face and seat will be uniformly ground.

Ten minutes grinding should be sufficient to properly seat a valve which is in fair condition, but a badly pitted valve will need longer grinding to make it clean and bright. When completed the valve should be removed from the cylinder, thoroughly washed with kerosene, and the valve seat wiped out perfectly clean.

#### Keeping Cylinders Clean.

That your car may at all times run smoothly and powerfully, it is highly important to keep the inside of the cylinders clean. There is no excuse for letting this part of your motor become foul—it is rank negligence and nothing else—and if you allow the cylinder and piston-head to become encrusted with carbon, is it any wonder that your engine knocks and pounds and loses power?

The writer has overhauled many a car brought in because of lost power, repeated knocking, etc., and upon taking the engine down, the cylinders were invariably found to be in a foul condition. In some cases, the piston-heads were so choked with this deposit that it seemed incredible that any self-respecting motor would consent to run under such conditions.

The cause of this sooty state is, of course, the oil used for lubricating the cylinders, and while all oils contain some carbon, those grades having a low fire test will obviously foul the cylinders much quicker. As the temperature within the cylinder is some 1,000 degrees Fahrenheit, it must be evident to all that a low-test oil will be entirely burned up and consumed before it can fulfill its mission of lubrication. It, therefore, stands to reason that only a high-grade gas-cylinder oil should be used in the cylinders, and such an oil will have a flash point of some 450 degrees Fahrenheit.

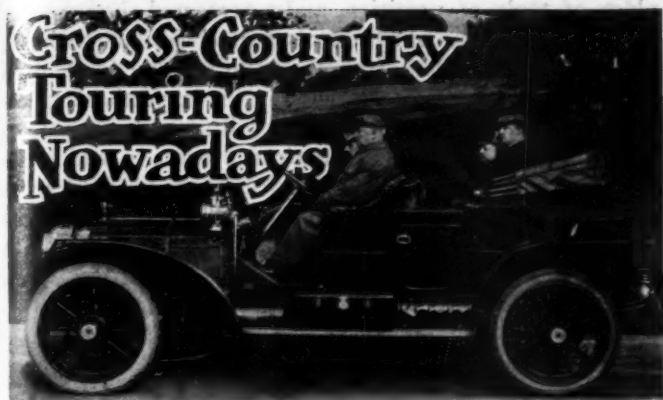
#### Never Neglect Cylinders for Extended Period.

The autoist should never allow the cylinders of his motor to become carbonized to any extent, but frequently flush them out. This may be easily done as follows:

Unscrew spark plugs, and place pistons at the outer end of the stroke, or at the outer dead center as per marks on your fly-wheel. Now fill the cylinders—through the spark plug holes—with kerosene and let it remain overnight. The next morning open the pet cocks in crankcase, or, better yet, unscrew them, and drain out the dirty kerosene. This done, replace pet cocks, start the motor, and open the pet cocks to blow out any deposit that may remain in the cylinders.

Cylinders should be cleaned in this manner at least twice a month—every week will be better—and if this is done often, no considerable deposit of carbonized oil will accumulate, and the car will always run at its best, smoothly, and at its rated power.





ONE of the recent Chicago to New York and return tourists was George T. Robie, of the Excelsior Supply Company, Chicago. The trip from Chicago to New York was comparatively uneventful, with roads in very fair condition.

The return trip began with a start from New York City at about noon and a leisurely run to Poughkeepsie for the night. Next day the Catskill country was enjoyed, with a luncheon stop at Saratoga, which was reached via Albany. The severe hills and the rough roads made the journey a trying one, but the Continental tires stood the test apparently without a scar, though, according to Mr. Robie, the day's run exacted harder service than would a thousand miles of ordinary travel. The Chicago to New York journey had been accomplished on a set of 1908 model Continentals that had already seen considerable service. Before starting the return a front tire was replaced with an AC type flat tread and both rear wheels were fitted with the new flat tread type course. The car was a close-coupled Packard.

Mr. Robie recites the remainder of the trip in these words: "After lunching at Saratoga, we continued our trip northward to Lake George, a distance of about thirty miles. Arriving there, we, like the youth who bore the banner with the strange device, were emphatically warned against attempting to proceed any further that night. We, however, continued, and though this warning was repeated at various points where we stopped to inquire the road, we added another twenty-five miles to the day's run, finally landing at Schroon Lake, a beautiful spot in the Adirondack Mountains. Here we put in for the night, after enjoying a feast of venison chops that left us too full for utterance. The next morning we returned to Saratoga and thence by way of Schenectady to Syracuse, arriving there at 6:30 P.M. A part of the next morning was spent visiting the University and at 10:00 A.M. we started for Buffalo by way of Auburn, Geneva, Canandaigua and Rochester. At Rochester we were held up between three and four hours by rain, but finally lighted our lamps and started for Buffalo, arriving at 9 P.M.

"Leaving Buffalo the next morning at 10:30 o'clock, we lunched at Ashtabula, and arrived at Cleveland at 5:30 P.M., where our friends evinced marked Missouri tendencies and we had to 'show them' that we had been able to cover the distance within seven hours. We left Cleveland next morning at 8:30, and traveled by way of Belleville to Kendallville, Ind. Kendallville was the one hoodoo town on the route, and here we experienced our first tire trouble of any sort whatsoever. We found that the valve of the remaining original tire, that is, the one not removed at New York, was leaking and the tire had gone flat. Being equipped with Continental demountable rims, it was easier to change tires than bother with the valve, so we removed this tire, replacing it with our spare.

"This was, however, not to be all of our troubles at Kendallville, as just as we were pulling out of there, the next morning for our run to Chicago, we enjoyed (?) our first puncture. This was soon remedied, and we started on the last lap of our trip with Chicago as the objective point. We left Kendallville at 8:00 A.M., lunched at South Bend, arriving there close to 12 o'clock, and reached Chicago at 4:10 P.M."

### LATEST TYPE OF FRENCH TRACTOR.

PARIS, Dec. 1.—In the agricultural world the French motor constructor has allowed himself to be outdistanced by the more practical and more commercial American. There are only three or four successful agricultural tractors constructed in France, and not one of them can lay claim to anything like general application. Each one has its own distinctive features and may be regarded more in the light of inventors' experiments than the machine that the farmer will receive with open arms.

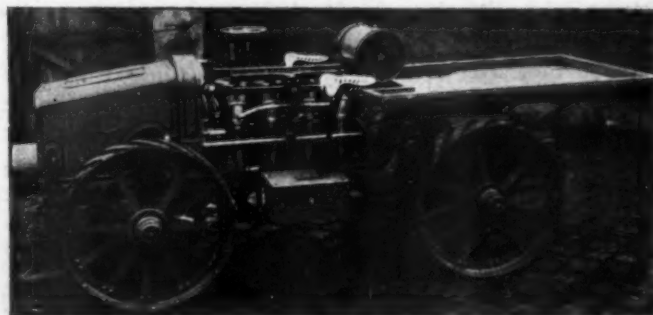
A newcomer to the small group has just been made in a four-wheel drive tractor, the first of its kind to be seen on this side of the Atlantic. The motor is a four-cylinder gasoline one with separate cylinders developing about 50 horsepower. The power plant is placed in the center of a robust pressed-steel frame, and transmits power forward to a gear box occupying the position usually reserved on an automobile to the engine. From the three-speed gear box a countershaft carries the drive by means of gearing to the front wheels. As the drive is through universal joints, the front wheels still retain their steering functions. From the left-hand side of the forward countershaft drive is carried rearward by means of bevel gear and propeller shaft running alongside the engine, to the rear countershaft, the final connection being by double side chains to the rear wheels.

In general design the engine has little that is distinctive. The four separate cylinders are water-jacketed, have valves on one side, high-tension ignition with current supplied from storage batteries, and gasoline supply by gravity from a tank immediately behind the driver's seat. There are two radiators, one immediately in front of the engine, and one at the fore end of the chassis. The rear one has immediately behind it a ventilator fan which draws in a current of air from the bonnet, which, in this case, only serves as a covering for the gear box.

Drive is taken from the engine by means of a cone clutch at the fore end, transmitting the power to the gear box with three speeds forward and reverse. In this tractor all the work naturally comes on the transverse shaft carrying the universals and connecting up to a large pinion on each driving wheel; for, in addition to driving the front wheels, the shaft has to transmit power to the rear wheels by means of the bevels, propeller shaft, countershaft, and side chains. The engine is a slow-speed one, running at about 600 revolutions a minute, and naturally gearing is very low, though no information would be vouchsafed regarding ratios.

Both front and rear wheels, made entirely of steel, and of equal size, are ribbed to give traction on soft ground. At the fore end of the chassis is a broad metal pulley by means of which the tractor can be employed for driving stationary machinery with belt connection. Steering is by means of upright column and wheel, engine control is by separate levers, and gear control by the usual type of side levers.

It is declared by the makers that the machine will plow to a depth of 4 inches at an inclusive cost of \$2.20 per hectare (2.2-5 acres); for a depth of 6 inches the cost is given at \$4.20 per hectare; for 13 1-2 inches the price is \$8. For operating a reaper the cost is declared to be \$1 per hectare. The figures, of course, are those of the manufacturer, and have not been controlled in public tests. There may be increased cost in the hands of the average French farmer whose knowledge of machinery is limited.



First Tractor of the Kind to Be Seen in France.



Vol. XIX

Thursday, December 10, 1908

No. 24

# THE CLASS JOURNAL COMPANY

Thirty-ninth Street Building, 231-241 West 39th St.  
New York City

H. M. SWETLAND, President

## EDITORIAL DEPARTMENT

A. G. BATCHELDER, Managing Editor  
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor  
W. F. BRADLEY, Foreign Representative

## BUSINESS DEPARTMENT

A. B. SWETLAND, Business Manager  
LOUIS R. SMITH FRANK B. BARNETT  
W. I. RALPH, 1035 Old South Building, Boston, Mass.  
C. H. GURNETT, 1200 Michigan Ave., Chicago, Ill.  
F. W. VAN SICKLEN, 1200 Michigan Ave., Chicago, Ill.  
H. H. GILL, Detroit, Mich.  
T. B. VAN ALSTYNE, Philadelphia, Pa.

Cable Address - - - - - Autoland, New York  
Long Distance Telephone - - - - - 2046 Bryant, New York

## SUBSCRIPTION RATES:

United States and Mexico - - - - - One Year, \$3.00  
Other Countries in Postal Union, including Canada - - - - - One Year, 5.00  
To Subscribers—Do not send money by ordinary mail. Remit by Draft,  
Post-Office or Express Money Order, or Register your letter.

## FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—W. H. Smith & Sons, Ltd., 186 Strand, London, W. C., and all their  
railroad bookstalls and agencies throughout Great Britain; also in Paris  
at 248 Rue de Rivoli.  
FRANCE:—L. Baudry de Saunier, offices of "Omnia," 20 Rue Duret, Avenue  
de la Grande Armée, Paris.  
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor  
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,  
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905	- - - - -	730,000
" " in 1906	- - - - -	791,000
" " in 1907	- - - - -	888,900

## EXPERIENCE AND SUCCESS BEGET COURAGE.

In the beginning the problem of the automobile was as an unsolved mechanical puzzle that cast a spell of gloom o'er financiers. Castings were cheap, dies were avoided, and temporary expedients reigned supreme. A little experience, a showing of success, and courage grew apace. It was never a question, as designers saw it, of the desirability of castings, or the uncertainty of forgings. It was simply a matter of courage on the part of designers to plan and of financiers to pay. The splendid crop of castingless automobiles to be seen at every hand to-day simply proves out the contention that an abstract idea is a tame cat in the absence of courage.

American automobile builders are forging to the fore, because they are possessors of enough courage to take advantage of quality, which, for the matter of that, is the twin brother of quantity, since the cost of correcting a mistake counts for little in the column of fixed charges in a big plant. The jigs, templates, gauges and dies, that in the abstract foot up to thousands of dollars, reduce to pennies per car, if the output is on a large scale, and duplication of parts so necessary in the long run becomes a reality in fact, instead of in theory, which can never be brought about in a shop in which cheap labor takes the

place of tools of precision, and a perfected shop system.

The methods by which excesses of cheap labor whittle out cars—no two alike, from the point of view of the man with his instruments of precision in the inspection department of the big American shop—will scarcely keep pace with the more aggressive American process in which the personal equation is minimized. The fixed arguments advanced to lend color to hand-made products, at the cost of cheap labor, will scarcely hold water, no more than a market could be created for hand-hewed watchdogs, even though they could be fitted with a mechanical snarl.



## LEFT HAND CONTROL FOR TOWN WORK.

Innovations in design or style that are in the least degree radical have seldom been undertaken in the automobile field without considerable preliminary delay, pending which the growth of the demand for the change made it easy to accede; except, of course, at the expense of makers rash enough to attempt to introduce something which was either a foreordained failure or which was in advance of its time. But, then, it would take a volume to record but a small part of the history of those "who guessed wrong" and went to the wall in consequence, or of those who tried to force engineering "ideals" upon the public and persisted in doing so until the receiver put an end to their well-meant but misguided efforts. Few things as has the automobile shown in such a striking manner what a costly and thankless job is the task of educating the public.

It is the general consensus of opinion that the left hand side of the car is the proper place of control for town work under American rules of the road, and while the subject has never here come in for the extended threshing out that our British cousins have given it not so very long ago, more than one American maker has decided to have the courage of his convictions by adopting it for his 1909 output. Instead of arguing the point pro and con through many reams and then letting the thing die a natural death, these American makers have acted first and will talk afterward. That the change is one involving numerous advantages is obvious, and it is, further, one that involves no fundamental departure in design or construction. The manner in which it is received should prove of interest, though its adoption should come much more easily through its compulsory use on the taxicab than might have been the case in earlier days.



## A WINTER OF AUTOMOBILE LAW-MAKING.

Indications multiply that this Winter will see considerable activity in the making and unmaking of automobile laws in not a few State legislatures. The inconsiderate few are going to make it extremely hard for the representatives of the great majority to secure reasonable laws or to retain liberal restrictions which were secured at considerable effort. There is a growing sentiment that the drivers of all automobiles should pass some kind of an examination, and, furthermore, any criminal abuse of the roads should be punished by a revocation, temporary or permanent, of the guilty driver. The time has arrived when automobilists generally must lend both their aid and moral support in purging their ranks of the highwaymen of the roads.



## AUTO MAKERS INTERESTED IN TARIFF REVISION

WASHINGTON, D. C., Dec. 7.—Contrary to expectations the hearing of the representatives of the automobile manufacturers before the Ways and Means committee, scheduled for today, did not materialize. A number of those prominent in the trade held a meeting in this city Sunday night and went over the situation very thoroughly. Recognizing the fact that they did not have sufficient data at their command at this time to lay before the committee, it was decided to ask the committee for an extension of time in which to file an elaborate brief and also to make an oral statement before the committee. When Chairman Payne called upon Mr. Briscoe this morning, the latter stated the situation to the committee and asked for two weeks' time in which to prepare the brief. The request was granted, Chairman Payne stating that the earlier the brief was filed the better it would be for the interests represented.

It was understood that the automobile importers would again be heard by the committee this morning, but none of them appeared, and it is likely that any further arguments they wish to make will have to be submitted in the shape of a brief.

Later in the day the automobile men were interested spectators of the convening of the second session of the Sixtieth Congress, having seats in the reserved gallery.

The party included Thomas Henderson, president of the National Association of Automobile Manufacturers; E. P. Chalfant, general manager, and H. B. Joy, L. H. Kittredge, A. L. Riker, and G. H. Stilwell, of the Association of Licensed Automobile Manufacturers; Benjamin Briscoe, chairman, Alfred Reeves, general manager, and Job T. Hedges, counsel, of the American Motor Car Manufacturers' Association.

### Viewed by General Manager Chalfant, A. L. A. M.

"The importers of foreign motor cars must surely feel that they were exposed to ridicule by the absurd statements of their representative before the Ways and Means committee, Friday, November 27," is the reply of E. P. Chalfant, the general manager of the Association of Licensed Automobile Manufacturers, when interviewed concerning the representations made by Chas. H. Sherrill in behalf of the Importers' Salon, who asked for a reduction in duty from 45 per cent. to 30 per cent. ad valorem.

"American automobile manufacturers have not made exorbitant profits, and a relatively small number of them have made profits at all. The manufacture of automobiles first began to assume the proportions of an important industry in 1902. Following is a table of the vital statistics of the trade:

Concerns in business in 1902.....	51
Started from 1902 to 1906 inclusive.....	270
Total .....	321
Discontinued during five years.....	155
In business December 31, 1906.....	166

"There are now listed 253 makers of automobiles in this country, of whom about 100 are turning out cars in fair quantity.

"It is safe to say that not 10 per cent. of the American automobile manufacturers are making money. A great deal of the manufacturers' money goes for experimentation. The large amount of capital required and the character of the business eat into the profit of the business very materially. Clearly the industry deserves proper protection from the normal production and the over-production of the European factories, with their cheap labor, low rate of taxes, and preferential rates on manufacturing machinery. In this country the cost of labor is two and one-half times what it is abroad. Materials abroad are cheaper, ground rent is less, the cost of living is less, the industry is taxed less, and all machinery imported for use in a new industry is admitted duty free or at a preferential tariff.

"When making the statement that 90 per cent. of the imported cars arrived in the shape of the naked chassis, it was apparently forgotten that just a little more than 40 per cent.

of the cars imported during the last twelve months were complete with bodies, and that bodies for the remaining 60 per cent. (by no means all of them minus bodies) would not keep busy for more than a portion of the year even one of the two carriage makers whom Mr. Sherrill mentions as having been kept alive by the business of the importers, whereas all the carriage makers outside the metropolitan district probably do not collectively get a dozen bodies to manufacture in a year for imported cars.

"Tariff rates must afford ample protection to American made goods, and provide a customs duty on imports equal to the difference in cost of production here and abroad.

"It is needless to say that the statement that the Association of Licensed Automobile Manufacturers is a 'trust' is absurd. This Association, whose members conduct a strictly competitive business, is the most important thing in the country for the industry of motor vehicle building, for the dealer in automobiles and for the persons who purchase them. In a word, in 1903, certain representative automobile makers agreed to recognize the validity of the Selden patent and pay license fees thereon. In these days of strenuous and sometimes unfair competition it is refreshing to find that a friendly and cooperative spirit exists and a frank discussion of business proceedings taking place among men engaged in the same industry.

"Speaking advisedly for both the A. L. A. M. and the A. M. C. M. A., there is no trade agreement in the American automobile business regulating the price of machines. Each manufacturer is unrestrained and free to regulate his own prices, and does so. The division between the classes of manufacturers relates solely to the payment or non-payment of royalties under the Selden patent. The other regulations refer to questions of publicity, the dissemination of trade information and the standardization of manufacture.

"Naturally both Associations have given the matter of tariff revision adequate attention, and some time ago presented their views in writing to the Tariff Committee of Congress. As heretofore, we will fight our battles in the proper forums. All the two Associations want is a square deal; a duty imposed on foreign built machines equal to the difference in cost of production here and abroad—giving the user (consumer) all the benefit in reduced price possible from the best and improved methods of producing good machines.

"The American automobile industry can live and succeed under the present rate of duty, providing only it is collected on the honest wholesale value of the foreign merchandise."

### What the Ford Protest Set Forth.

WASHINGTON, D. C., Dec. 5.—The Ford Motor Co. has filed with the Ways and Means Committee, which is now engaged in a series of hearings preparatory to a revision of the tariff law, a strong protest against an increase of the duty on automobiles. Their protest is in part as follows:

"Within the past few days it has come to our attention that a large number of manufacturers of automobiles in this country, being, no doubt, a majority of the members of what is known as the American Motor Car Manufacturers' Association and the Association of Licensed Automobile Manufacturers, have appointed committees to attend a hearing granted by your committee on the subject of the tariff on automobiles. The time was so short that we did not have an opportunity of bringing the matter before the associations above mentioned, but we have written to all of the members of this committee vigorously opposing the petition which they propose to present to your committee urging for an advance of the 45 per cent. ad valorem tax now imposed on automobiles to 60 per cent. ad valorem.

"We believe that this petition does not represent the position and attitude of all the members of the associations referred to.

We are unalterably opposed to any increase in this tariff. We believe that this so-called infant industry is fully protected all it should be, and, in fact, we believe the present tax is a greater protection than this industry should have. The industry has progressed sufficiently far, we believe, not to be entitled to any greater protection than would be represented by the actual difference in the amount of labor paid to manufacture automobiles in this country and that which is paid to manufacture automobiles in Europe. This difference is very small, as the amount of labor on automobiles in proportion to the amount of material is almost insignificant. If the tariff must be revised, it should be reduced and under no circumstances raised."

### DECORATIVE SCHEME FOR PALACE SHOW.

Although there have been automobile shows for many years and although each year the decorating committee promises something new, different, and better, thus far they have been able to make good each time. This year, however, the show committee of the A. M. C. M. A. not only wishes to surpass all previous American but all similar exhibitions. A glimpse of the scheme will show in part whether this be possible. More than this only the decorations themselves can show. Europe and this country have been searched by the S. R. Ball Company, the decorating contractors, for ideas which might be used in the Palace affair to make it different from other shows. The fact that all the foreign makers are to exhibit in the Palace only, making it an international exhibition, adds to the ideas embodied in the decorations. For this reason the show committee included a considerable amount of European suggestions in the decorating.

Thousands of lights, paintings, mirrors, statues, flags of nations represented, searchlights, and harmonious colors, will, in brief, cause the Palace show to be an event in automobile history.

The present entrance on Lexington avenue will be an attractive porte cochere, with statuary of Egyptian design supporting electric signs which will flash out a welcome. Large signs will cover the rear wall. Surmounting the columns will be a classic balustrade, urns filled with evergreens lending scenic effect to a painting representing an automobile, leaving a flaming trail of dust and light. The vestibule will be artistically draped with flags, while at the stairway approach will be two life size female figures resting on an eagle supporting a wheel, all finished in verdi antique. The ceiling of the entrance hall will be canopied in silk with light radiating from the center. The walls will be decorated with mural paintings by famous artists.

The main auditorium hall will be treated in early English style. The balconies are hidden by orange colored tiling, extending three feet outwards over the main hall, while meeting the tops of the present capitals will be a frieze depicting automobile contests, including the Glidden tour, the Vanderbilt, and the Savannah road races. The main auditorium will have its ceiling covered with a blue fabric, which, combined with lattice work, urns of flowers, and plants, will give a hanging garden effect. At the end of the hall, now the stage, a real garden will be formed of bay trees, evergreens, and flowers. By means of mirrors the room will appear twice as large as it is, while the decorations will be duplicated in many different forms.

Dividing the garden from the general exhibition hall will be a striking piece of statuary 15 feet in length and 6 feet high, with life-sized figures representing "Wisdom Instructing Youth in the Mysteries of Automobile Construction." Original statues of heroic size representing "The Spirit of Speed" are to stand on the balcony rails upholding flowers and streamers of electric light, which will lead to a ball in the center of the hall.

Another important improvement will be the installation of a café on the third floor. This year the café will be transformed into a reproduction of an old English inn. It was intended to build a German wine cellar, but in order to harmonize with the style of architecture, the management changed it into a room modeled after the interior of a famous Kentish Inn. A stone-wall effect will divide the room from the main exhibition hall, while old chandeliers, dishes and mugs will lend to the effect.

### HOUPT TAKES ON THE HERRESHOFF.

Looking over the situation for 1909 develops new surprises every time the task is performed. The latest bit of information that should prove of more than passing interest to the supporters of the industry lies in the consummation of the deal by which Harry S. Houpt has taken over the entire output of the Herreshoff Motor Company for the coming year. The works of the Herreshoff company, at Detroit, will be devoted to the filling of Eastern orders during 1909, rather with the hope that in a year the capacity of the plant will be increased sufficiently to catch up to the general demand.

Lightness, strength, and absolutely up-to-date features are promised for the new Herreshoff cars, and widespread interest is aroused, especially in view of the moderate price that will go with the cars. It is proposed to furnish a high-class car, taking after the best European models, yet even so the design will be "Herreshoff" from tires to trim.

The Herreshoff will be shaft driven with a four-cylinder engine, water-cooled, four-cycle, and a self-contained power plant. The three point suspension will be embodied, and the transmission will be progressive, three speeds and reverse. The Herreshoff idea is that simplicity and the elimination of a multiplicity of small parts in and about the gear-set follow the adoption of the progressive type of gear. A tubular drive leads to a live rear axle, in which the compensating gear is of the bevel type, incorporating universal joints of a noteworthy design and means for lubricating and excluding grit. The rear (live) axle will be worthy of the rest of the design, and the wheels will be of a most advanced design fitted with 32 by 3 1-2 tires. Stress is laid on the design of the chassis of channel section, and of material the nature of which is reflected in the tests for physical properties, including a tensile strength of 135,000 pounds per square inch. Half-elliptic springs will be used, front and rear, and the front axle will be of the I section, nice proportions, and fine material; drop forged, of course.

The main attraction in the Herreshoff will be the motor, of the Herreshoff design, in which the speed possibilities lie between 200 and 2,400 revolutions per minute in actual service. Rated at 24-horsepower, and guaranteed to deliver the power, this motor, with large valves and a special carbureter, which largely influences the performance, will have a double system of ignition including a Bosch magneto. The flexibility of the motor has been favorably commented upon. The car weight will be 1,600 pounds, and the weight for power will therefore be such as to assure a "live" road performance.

The car will be on exhibition on or about January 1, though it is to be noted that it is Harry S. Houpt who "takes on" the Herreshoff—not the Harry S. Houpt Company, located at Broadway and Sixty-third street.

### BENZ AGENCY ESTABLISHED IN AMERICA.

The presence of Herr Carl Neumaier, of the Benz firm, at the Grand Prize at Savannah, may have heralded to some few the news of an American agency for the Benz cars. So the announcement of the Times Square Automobile Company, of New York City, as holding company for the Benz Auto Import Company, with salesrooms at 1597 Broadway, will not be a complete surprise to those who have followed the success of this German car on the Continent.

September 1 the concern opened its new factory at Mannheim, Germany, which will allow it to branch out into foreign fields, something heretofore impossible because of the demand for these cars abroad. The shops now cover 13 acres, giving employment to 6,110 men. To those familiar with reliability and speed contests, the Benz is well known, having competed in many events during the last few years, both in America and abroad, and always showing among the leaders.

The car driven by Hemery in both races will be on exhibition at the Broadway salesrooms until the opening of the Palace Show, where it will be shown along with three standard models.



## WHAT CLUBS ARE DOING THE COUNTRY OVER

### QUAKER CITY CLUB ENTERTAINS NOTABLES.

PHILADELPHIA, Dec. 7.—The Quaker City Motor Club made its initial plunge into society last Wednesday night, when upward of a hundred members and guests gathered around the festive board at the Hotel Walton, the occasion being the first annual banquet of the club. All the prominent local and State political lights were present, the only absentee of importance being Governor Stuart, who was called suddenly out of the city in the afternoon on official business. President P. D. Folwell occupied the chair, and G. Douglass Bartlett, the club's counsel and chairman of its enterprising legal committee, introduced the speakers in short speeches fairly bristling with wit.

His Honor Mayor Reyburn, after being liberally plastered with compliments by the toastmaster, reciprocated in kind, and handed the club a bouquet or two, especially complimenting it upon the management of the 200-mile road race in Fairmount Park, which wound up the Founders' Week festivities last October. The Mayor also expressed his appreciation of the work of the club in assisting the authorities in suppressing reckless driving on the city streets and in the suburbs and promised that as long as he remained at the head of the city administration he would aid in furthering every undertaking of the club. The Mayor is a most enthusiastic motorist, and the possibility of inducing the authorities to allow the club to run the Fairmount Park stock-car race as an annual fixture was discussed informally during the evening, the opinion being universal that the desired permission would be granted.

Director Henry Clay, of the Department of Public Safety, responded appreciatingly when his work in guarding the Fairmount Park course was lavishly praised by the toastmaster. The director lauded the automobile as an adjunct in municipal work and said the city is now negotiating with several manufacturers with a view of installing motor patrol wagons and ambulances and doing away entirely with the horse-drawn vehicles now used in those services.

The Philadelphia to Pittsburg highway was boosted in a neat speech by W. Hicks, of Tyrone, Pa., who put in a plea for the adoption of the Juniata Valley route when the route is finally decided upon. Edward Murphy, George Graham and A. Raymond Raff lent additional hilarity to the proceedings with witty speeches.

"Jack" Hiscock, a local newspaper man, struck a popular chord when he advocated legislation which would do away with the double license fees collected from Philadelphia outoists by the city and the State. His remarks, indeed, were so much to the point that a motion was carried instructing President Folwell to name a committee of the club to go to Harrisburg next January to urge the passage of legislation which shall do away with the necessity of local automobilists "coming up double."

### NOW THE AUTOMOBILE CLUB OF ROCHESTER.

ROCHESTER, N. Y., Dec. 7.—The Rochester Automobile Club on account of conflict of initials with the Rochester Athletic Club has decided to change its name and will be known hereafter as the Automobile Club of Rochester. This flourishing club now has a membership of 538 and is working hard to attain the 600 mark.

Through the energy of the club signs have been placed on the road to Canandaigua by the new route. This road is reported in excellent condition and will be used next year while the Pittsford-Mendon road is being improved. The Churchville road is still the best route to Batavia and Buffalo.

The club is working for the appointment of George C. Diehl, a member of the Buffalo club and of the Good Roads Board of the A. A. A., on the new Highway Commission.

### BUFFALO CLUB LEADS IN ACTIVE MEMBERSHIP.

BUFFALO, Dec. 7.—The Automobile Club of Buffalo now has the largest active membership in the country, the additions made at the last regular meeting bringing the total number to 1,510. At the club's annual meeting and election of officers to be held Monday evening, December 21, in Concert Hall, just across the hallway from the clubrooms in the Teck Theatre Building, the following candidates will be voted upon: President, John M. Satterfield; vice-president, Laurens Enos; treasurer, Harry Thorp Vars; secretary, Dai H. Lewis; board of directors, Charles Clifton, E. R. Thomas, E. H. Butler, George C. Diehl, James N. Byers, Maurice M. Wall, and George P. Urban.

In case of the popular Mr. Lewis, this is a matter of reelection, he having held the position of secretary for several years. With Messrs. Satterfield and Enos, it is promotion, they having satisfactorily filled the positions of vice-president and treasurer respectively in the year just past. Frank B. Homer declined a reelection as president.

This vigorous club, it will be remembered, was the first in the country to oppose and defeat a city tax imposed on automobiles. Judge Hodson's opinions in this case will doubtless be an important factor to other clubs engaged in similar legislation.

### NEW JERSEY CLUB HAS OVER 1,400 MEMBERS.

NEWARK, N. J., Dec. 10.—Two former United States Senators, a former governor of New Jersey, as well as a former mayor of the city of Newark, are among the many new members added to the roster of the New Jersey Automobile and Motor Club on Monday night. The list includes, besides ex-United States Senators, John F. Dryden and James Smith, Jr., ex-Governor Franklin Murphy and former Mayor Henry M. Doremus, of Newark, and also sixty prominent New Jerseyites who are prominent in political and financial circles. Aside from these, the list includes one woman member (making four women members of the club), as well as a batch of associate members. The New Jersey club is now pretty close to the Automobile Club of Buffalo with 1,400 active members in good standing. This does not include a large number of associate members, which swells the list materially.

### WEBB NOW PRESIDENT OF LONG ISLAND CLUB.

BROOKLYN, N. Y., Dec. 7.—A record attendance was on hand for the annual election of the Long Island Automobile Club, Fulton and Cumberland streets. The reports of the various committees were read and plans for the winter discussed. The financial committee reported the club to be in exceptionally prosperous condition, the assets far exceeding the liabilities. A gain of over fifty members was shown for the past year, with the list constantly growing.

The election resulted as follows: President, Frank G. Webb; vice-president, William Schimpf; treasurer, C. C. Cluff; secretary, Herbert Andrews. The three new members of the board of governors are Alfred Wilmarth, Charles J. Edwards, and Dr. A. C. Howe.

### HARTFORD CLUB AFTER SPEED MEMBERS.

HARTFORD, Conn., Dec. 7.—The past week has been a lively one in automobile club circles; Wednesday evening the governors of the Automobile Club of Hartford met to hear the cases of two members who had been summoned for violation of the speed law. The notification of violation of the law was forwarded by the club attorneys, Schutz & Edwards. One member who had been communicated with did not like the tone of the letter he received and forthwith tendered his resignation to the

board, which was not accepted. At the request of the club secretary the member in question appeared at the meeting and was represented by counsel. The case was thoroughly threshed out, and the member decided to withhold his resignation for another two weeks. In short, the first letter of the club attorney was not accepted in the spirit in which it was sent and this caused all the trouble. Another member who has been notorious for speed violations failed to appear and he was accordingly, by vote of the board, dropped from membership and so notified.

#### WILL WORK TO RETAIN CONNECTICUT LAW.

HARTFORD, Conn., Dec. 7.—The directors of the Connecticut Automobile Association met at the Allyn House Friday afternoon last. Colonel George Pope resigned as chairman of the legislative committee, and F. T. Staples of the Automobile Club of Bridgeport was elected his successor. Ralph D. Britton was elected chairman of the good roads committee. C. E. Whitney recommended that some provision be made for firms or individuals desiring to be associate members. Mayor George M. Landers of New Britain resigned as a director and chairman of the good roads committee. Objection was raised to the increase in the annual dues of the American Automobile Association from 25 to 50 cents for each member of the State organization. It was voted that the present law be commended to the State legislative committee, for the continuance of which everything should be done by the State body.

#### DENVER CLUB TO HAVE SHOW.

DENVER, COLO., Dec. 5.—The first annual automobile show of the Denver Motor Club will be held at the Auditorium, Denver, February 16, 17, 18, 1909. The show will be under the direct management of the show committee, consisting of Ralph W. Smith, chairman; C. P. Allen, Dr. E. F. Dean, George E. Turner, and Dr. W. H. Sharpley.

The committee will mail application blanks and floor plans December 1, and applications already on file will take up the major portion of the 16,000 square feet of available floor space. The main floor will be reserved for the exhibit of complete automobiles. Two of the larger boxes will be reserved for the Denver Motor Club, which will hold open house for all show visitors. Special programs of an education and entertaining nature will be given each night. Excursion rates on all railroads during the week of the show is expected to aid materially in bringing people from all parts of the State.

#### A PENNSYLVANIA CLUB AFTER ROADS.

YORK, PA., Dec. 5.—Recommendations will be made to the City Council by the York County Automobile Association to have more streets in the city of York paved and rounded into better condition. This was the outgrowth of a meeting held last evening. A number of York merchants were present at the meeting and identified themselves with the new movement. Further plans relative to the improvement of county roads will be discussed and acted upon by the association at a meeting to be held some time this month.

#### NEW ORLEANS CLUB WANTS ROADS.

NEW ORLEANS, Dec. 5.—Things are humming in automobile circles in New Orleans. The recent races and the formation of the New Orleans Automobile Club and its affiliation with the A. A. A. have been eventful. All of the dealers report that business is getting brisker, and prospects are indeed encouraging.

A rousing big meeting of the New Orleans club was held last week, when the Louisiana Motor League affiliated with the new organization. The object of this club is for good roads, and from now on an active campaign will be waged in this direction. The first project taken up by the club is the building of a good shell road from this city to Chef Menteur, a famous hunting and fishing district, 22 miles from the city. The new

road follows the lake and runs through some picturesque country. Several miles have already been built, and as the city, State and one of the railroads have promised aid, it looks as if it will be finished in short order. A clubhouse will be built at the end of the road.

The New Orleans Automobile Club has now several hundred members, and the aim is to get 1,000 members. President T. C. Campbell and Secretary-Treasurer Homer George have been among the leaders in this movement. Mr. George recently visited Birmingham and organized a new club there in place of the old one, which had died out. Two hundred members were secured in short order.

#### CLUB DOINGS IN GENERAL.

Alabama.—The Fulton County Automobile Club, through its attorney have filed application for letters of incorporation. This club is not organized for pecuniary gain, but to promote the best interests of automobile owners, there will be no capital stock, but it asks to be incorporated for fifty years. To accomplish its object this club proposes to establish club houses in the different sections of the county immediately, and take any further steps that will prove a benefit to the members.

#### TIRES FOR FIRE-FIGHTING APPARATUS.

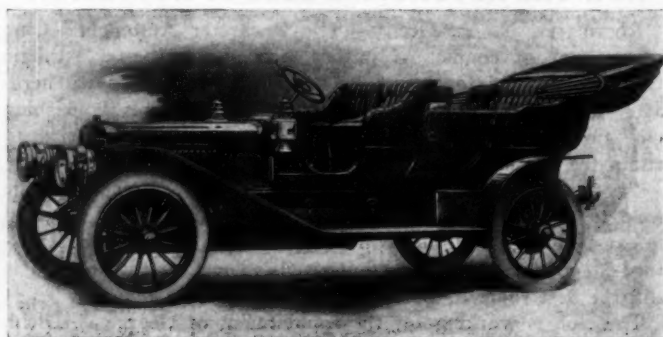
The recent increase in the use of self-propelled fire fighting apparatus is very noticeable. Some of the far western cities have made remarkable progress in this branch. Thus the little town of Vancouver, B. C., now has no less than five pieces of fire apparatus which are motor driven, the latest to be received being two Seagrave combination wagons. This fire department experimented with pneumatic tires, but owing to the heavy loads and high speeds required, these were not a success.

After trying out solid tires the doubt regarding their serviceability at these high speeds was soon dispelled, and the last two pieces of apparatus were consequently ordered with solid tires. These were specified of the cushion type, made by the Swinehart Clincher Tire & Rubber Company, of Akron, O. Considering that a guarantee of satisfactory service at a speed of 35 miles per hour was required, this order is gratifying to the company.

They attribute their success in this branch of service to the cushion effect produced by concaving the sides of the tire and also to the cross-wire type of fastening device. This fits into standard clincher rims, thus protecting the fastening and affords security against accident as well. This installation made after long tests and under such a strong guarantee will go far towards dispelling the mistaken idea that speeds of 12 to 18 miles per hour mark the limit of solid tires.

#### THE BIGGER OF THE TWO WINTON "SIXES."

The Winton factory for 1909 will concentrate on two six-cylinder classes, the smaller 45-horsepower and the larger 60-horsepower. These will be equipped with all forms of body, the cut below showing the neat lines of the 60-horsepower touring body. The air starting feature of these cars, so successful in the past, will be continued on both models.



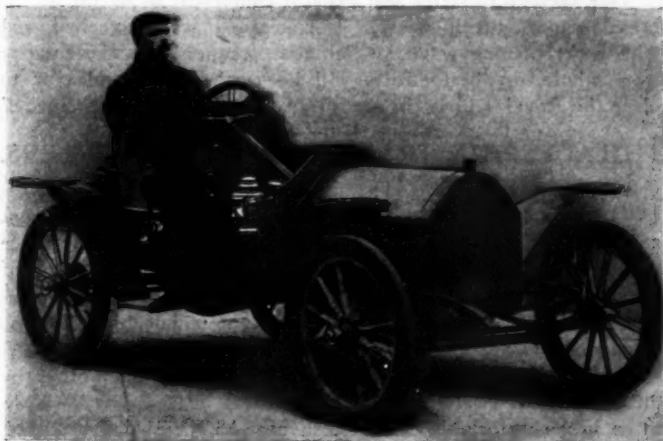
Winton Six-Cylinder Touring Car of 60 Horsepower.



### AN ATTRACTIVE PROPOSITION FOR 1909.

DETROIT, Dec. 7.—Low weight, low power, and low cost. High speed, high grade, and high art. Thus might a description of the "Hupp" be terminated. This car, made by the Hupp Motor Car Co., of Detroit, Mich., the general appearance of which is here illustrated, should be easily picked out in company, not so much because it is in any way at odds with the conventions, but for its rather strict conformity to the practices that are generally regarded as too costly to gain admittance to the haunts of the low-priced products. The average autoist seems to support a lingering suspicion that low price must carry with it a certain handicap by way of things that are not good enough to go into cars that are noted for their real qualities. Skeptics, with a penchant for riding in good automobiles, will have to revise themselves during the coming year, since the prices of cars do not always seem to be the gauge of quality.

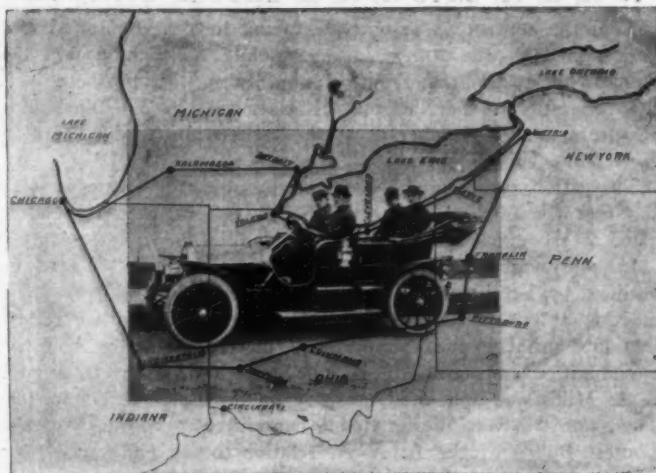
The motor is of the water-cooled, four-cycle type, with four cylinders, and rated at 16-20 horsepower. Since the car weighs 1,100 pounds, the road performance will be that due to nearly 2 horsepower per hundred weight. Speed, of course, will assert itself under these conditions, and good road performance generally will be the natural sequence. From the motor to the transmission will be through a metal to metal cone clutch of suitable design and construction, and since the gear set is bolted to the motor case the system assumes unit power plant proportions.



One Attractive Proposition for 1909.

The engine is water-cooled, using a vertical tubed radiator, with straight "gills," and an adequate means of maintaining a vigorous circulation of the water. A Breeze carbureter is responsible for the mixture, and the gasoline system in general is up to the same standard of perfection. Considering the ignition, it is to call attention to the Bosch high-tension system to the entire exclusion of all other means besides.

These are some general features of the car: Frame of pressed steel, of the channel section, suitably braced laterally, is suspended on semi-elliptic springs in front, while the rear springs include "patented" lateral members. Since the car is of the shaft drive type, the radius rod details are in conformity, and the live rear axle is up to a fitting standard, with Hyatt roller bearings. Two sets of brakes are provided, both on the rear axle, and both of which are internal expanding. The service brakes are controlled by a foot lever, and the emergency brakes answer to the beck of a suitable side lever. Universal joints are used on the cardan shaft, and means are provided to exclude "grit," providing at the same time adequate oiling facilities. The steering post is at a desirable rake, and lost motion, so much to be avoided, is suitably guarded against. An appropriate run-about body, complete set of tools, oil lamps, and a dragon horn are included in the price. The illustration shows the appearance of the body, and the fuel tank will be seen back of the seat. The mud guards are worth taking a look at as well. The car as a whole should make its mark. The price is \$750 F.O.B.



Inter-State Demonstration of a New Model.

### DEMONSTRATION OF A NEW MODEL.

The illustration above is that of one of the Model 9-H, \$1,500, Stoddard-Daytons while on the first demonstrating trip. This trip, as outlined by the map, covered a route taking in Indianapolis, Chicago, Kalamazoo, Detroit, Toledo, Cleveland, Erie, Buffalo, Franklin, Pittsburg, Columbus, and return to Dayton. The total mileage of this trip, including several demonstrations in each of the above towns, was 2,164 miles, in which it was estimated a total of 112 gallons of gasoline was consumed. This gives an average of 19.36 miles per gallon, which it must be understood includes the average consumption of any one month's driving of this model, as the car was gone from Dayton exactly one month, and the above was the total "gas" used.

### A BRITISH COW-CATCHER FOR AUTOS.

Everybody likes to be up-to-date. There is no doubt about this particularly in this country, but it is doubtful if many of our rural automobile enthusiasts will follow the lead of an English car owner who has fitted the front of his car with a buffer of immense diameter and very strongly built. A better name to give this peculiar accessory might be "cow-catcher," for that is the peculiar purpose for which this was intended. The owner of the large car shown in the accompanying cut, as it appeared on the Strand, London, was greatly annoyed on his country trips by having to wait for cattle in the road to move aside. Not daring to ram them with the ordinary fragile front end, he conceived the idea illustrated. These cow-catchers, for there are two of them, are so strongly built and also so rigidly attached that cattle are unceremoniously pushed aside.



Here is a British "Cow-Catcher" for Autos.

board, which was not accepted. At the request of the club secretary the member in question appeared at the meeting and was represented by counsel. The case was thoroughly threshed out, and the member decided to withhold his resignation for another two weeks. In short, the first letter of the club attorney was not accepted in the spirit in which it was sent and this caused all the trouble. Another member who has been notorious for speed violations failed to appear and he was accordingly, by vote of the board, dropped from membership and so notified.

#### WILL WORK TO RETAIN CONNECTICUT LAW.

HARTFORD, Conn., Dec. 7.—The directors of the Connecticut Automobile Association met at the Allyn House Friday afternoon last. Colonel George Pope resigned as chairman of the legislative committee, and F. T. Staples of the Automobile Club of Bridgeport was elected his successor. Ralph D. Britton was elected chairman of the good roads committee. C. E. Whitney recommended that some provision be made for firms or individuals desiring to be associate members. Mayor George M. Landers of New Britain resigned as a director and chairman of the good roads committee. Objection was raised to the increase in the annual dues of the American Automobile Association from 25 to 50 cents for each member of the State organization. It was voted that the present law be commended to the State legislative committee, for the continuance of which everything should be done by the State body.

#### DENVER CLUB TO HAVE SHOW.

DENVER, COLO., Dec. 5.—The first annual automobile show of the Denver Motor Club will be held at the Auditorium, Denver, February 16, 17, 18, 1909. The show will be under the direct management of the show committee, consisting of Ralph W. Smith, chairman; C. P. Allen, Dr. E. F. Dean, George E. Turner, and Dr. W. H. Sharpley.

The committee will mail application blanks and floor plans December 1, and applications already on file will take up the major portion of the 16,000 square feet of available floor space. The main floor will be reserved for the exhibit of complete automobiles. Two of the larger boxes will be reserved for the Denver Motor Club, which will hold open house for all show visitors. Special programs of an education and entertaining nature will be given each night. Excursion rates on all railroads during the week of the show is expected to aid materially in bringing people from all parts of the State.

#### A PENNSYLVANIA CLUB AFTER ROADS.

YORK, PA., Dec. 5.—Recommendations will be made to the City Council by the York County Automobile Association to have more streets in the city of York paved and rounded into better condition. This was the outgrowth of a meeting held last evening. A number of York merchants were present at the meeting and identified themselves with the new movement. Further plans relative to the improvement of county roads will be discussed and acted upon by the association at a meeting to be held some time this month.

#### NEW ORLEANS CLUB WANTS ROADS.

NEW ORLEANS, Dec. 5.—Things are humming in automobile circles in New Orleans. The recent races and the formation of the New Orleans Automobile Club and its affiliation with the A. A. A. have been eventful. All of the dealers report that business is getting brisker, and prospects are indeed encouraging.

A rousing big meeting of the New Orleans club was held last week, when the Louisiana Motor League affiliated with the new organization. The object of this club is for good roads, and from now on an active campaign will be waged in this direction. The first project taken up by the club is the building of a good shell road from this city to Chef Menteur, a famous hunting and fishing district, 22 miles from the city. The new

road follows the lake and runs through some picturesque country. Several miles have already been built, and as the city, State and one of the railroads have promised aid, it looks as if it will be finished in short order. A clubhouse will be built at the end of the road.

The New Orleans Automobile Club has now several hundred members, and the aim is to get 1,000 members. President T. C. Campbell and Secretary-Treasurer Homer George have been among the leaders in this movement. Mr. George recently visited Birmingham and organized a new club there in place of the old one, which had died out. Two hundred members were secured in short order.

#### CLUB DOINGS IN GENERAL.

Alabama.—The Fulton County Automobile Club, through its attorney have filed application for letters of incorporation. This club is not organized for pecuniary gain, but to promote the best interests of automobile owners, there will be no capital stock, but it asks to be incorporated for fifty years. To accomplish its object this club proposes to establish club houses in the different sections of the county immediately, and take any further steps that will prove a benefit to the members.

#### TIRES FOR FIRE-FIGHTING APPARATUS.

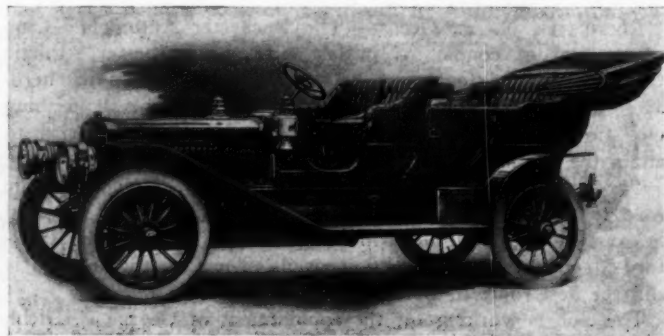
The recent increase in the use of self-propelled fire fighting apparatus is very noticeable. Some of the far western cities have made remarkable progress in this branch. Thus the little town of Vancouver, B. C., now has no less than five pieces of fire apparatus which are motor driven, the latest to be received being two Seagrave combination wagons. This fire department experimented with pneumatic tires, but owing to the heavy loads and high speeds required, these were not a success.

After trying out solid tires the doubt regarding their serviceability at these high speeds was soon dispelled, and the last two pieces of apparatus were consequently ordered with solid tires. These were specified of the cushion type, made by the Swinehart Clincher Tire & Rubber Company, of Akron, O. Considering that a guarantee of satisfactory service at a speed of 35 miles per hour was required, this order is gratifying to the company.

They attribute their success in this branch of service to the cushion effect produced by concaving the sides of the tire and also to the cross-wire type of fastening device. This fits into standard clincher rims, thus protecting the fastening and affords security against accident as well. This installation made after long tests and under such a strong guarantee will go far towards dispelling the mistaken idea that speeds of 12 to 18 miles per hour mark the limit of solid tires.

#### THE BIGGER OF THE TWO WINTON "SIXES."

The Winton factory for 1909 will concentrate on two six-cylinder classes, the smaller 45-horsepower and the larger 60-horsepower. These will be equipped with all forms of body, the cut below showing the neat lines of the 60-horsepower touring body. The air starting feature of these cars, so successful in the past, will be continued on both models.



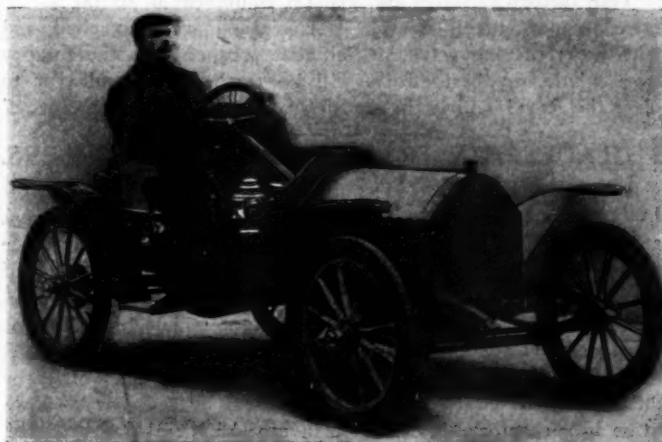
Winton Six-Cylinder Touring Car of 60 Horsepower.



### AN ATTRACTIVE PROPOSITION FOR 1909.

DETROIT, Dec. 7.—Low weight, low power, and low cost. High speed, high grade, and high art. Thus might a description of the "Hupp" be terminated. This car, made by the Hupp Motor Car Co., of Detroit, Mich., the general appearance of which is here illustrated, should be easily picked out in company, not so much because it is in any way at odds with the conventions, but for its rather strict conformity to the practices that are generally regarded as too costly to gain admittance to the haunts of the low-priced products. The average autoist seems to support a lingering suspicion that low price must carry with it a certain handicap by way of things that are not good enough to go into cars that are noted for their real qualities. Skeptics, with a penchant for riding in good automobiles, will have to revise themselves during the coming year, since the prices of cars do not always seem to be the gauge of quality.

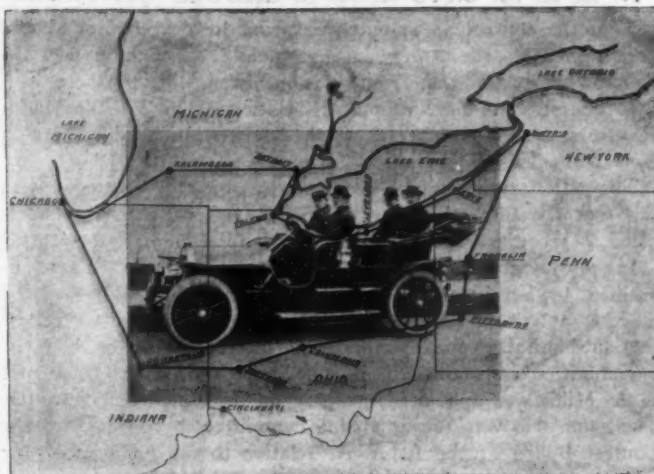
The motor is of the water-cooled, four-cycle type, with four cylinders, and rated at 16-20 horsepower. Since the car weighs 1,100 pounds, the road performance will be that due to nearly 2 horsepower per hundred weight. Speed, of course, will assert itself under these conditions, and good road performance generally will be the natural sequence. From the motor to the transmission will be through a metal cone clutch of suitable design and construction, and since the gear set is bolted to the motor case the system assumes unit power plant proportions.



One Attractive Proposition for 1909.

The engine is water-cooled, using a vertical tubed radiator, with straight "gills," and an adequate means of maintaining a vigorous circulation of the water. A Breeze carbureter is responsible for the mixture, and the gasoline system in general is up to the same standard of perfection. Considering the ignition, it is to call attention to the Bosch high-tension system to the entire exclusion of all other means besides.

These are some general features of the car: Frame of pressed steel, of the channel section, suitably braced laterally, is suspended on semi-elliptic springs in front, while the rear springs include "patented" lateral members. Since the car is of the shaft drive type, the radius rod details are in conformity, and the live rear axle is up to a fitting standard, with Hyatt roller bearings. Two sets of brakes are provided, both on the rear axle, and both of which are internal expanding. The service brakes are controlled by a foot lever, and the emergency brakes answer to the beck of a suitable side lever. Universal joints are used on the cardan shaft, and means are provided to exclude "grit," providing at the same time adequate oiling facilities. The steering post is at a desirable rake, and lost motion, so much to be avoided, is suitably guarded against. An appropriate run-about body, complete set of tools, oil lamps, and a dragon horn are included in the price. The illustration shows the appearance of the body, and the fuel tank will be seen back of the seat. The mud guards are worth taking a look at as well. The car as a whole should make its mark. The price is \$750 F.O.B.



Inter-State Demonstration of a New Model.

### DEMONSTRATION OF A NEW MODEL.

The illustration above is that of one of the Model 9-H, \$1,500, Stoddard-Daytons while on the first demonstrating trip. This trip, as outlined by the map, covered a route taking in Indianapolis, Chicago, Kalamazoo, Detroit, Toledo, Cleveland, Erie, Buffalo, Franklin, Pittsburg, Columbus, and return to Dayton. The total mileage of this trip, including several demonstrations in each of the above towns, was 2,164 miles, in which it was estimated a total of 112 gallons of gasoline was consumed. This gives an average of 19.36 miles per gallon, which it must be understood includes the average consumption of any one month's driving of this model, as the car was gone from Dayton exactly one month, and the above was the total "gas" used.

### A BRITISH COW-CATCHER FOR AUTOS.

Everybody likes to be up-to-date. There is no doubt about this particularly in this country, but it is doubtful if many of our rural automobile enthusiasts will follow the lead of an English car owner who has fitted the front of his car with a buffer of immense diameter and very strongly built. A better name to give this peculiar accessory might be "cow-catcher," for that is the peculiar purpose for which this was intended. The owner of the large car shown in the accompanying cut, as it appeared on the Strand, London, was greatly annoyed on his country trips by having to wait for cattle in the road to move aside. Not daring to ram them with the ordinary fragile front end, he conceived the idea illustrated. These cow-catchers, for there are two of them, are so strongly built and also so rigidly attached that cattle are unceremoniously pushed aside.



Here is a British "Cow-Catcher" for Autos.

### N. A. A. M. SAYS A. A. A. SHOULD CONTROL.

That the control of automobile racing in this country should be retained by the American Automobile Association was the opinion expressed at the regular monthly meeting of the executive committee of the National Association of Automobile Manufacturers, held December 2, at the association headquarters in New York City.

The action, however, did not find any objection whatever with the recently adopted policy of the A. A. A. to decline hereafter to recognize races on half and mile circular horse tracks.

In conjunction with the general work of the A. A. A., as outlined by President William H. Hotchkiss, who addressed the meeting at considerable length, the executive committee promised substantial financial support. At the request of the A. A. A. a committee consisting of H. O. Smith, W. E. Metzger and S. A. Miles was appointed to serve on its executive committee. The same trio were designated a committee to confer with the Contest Board of the A. A. A. relative to the endurance tour of 1909.

The Waverley Company, of Indianapolis, was elected to membership.

C. G. Stoddard, of the Dayton Motor Car Company, Dayton, O., was elected to the executive committee.

The traffic department of the association has recently arranged important changes affecting the transportation of automobiles to the South and West. While in the West recently Mr. Marvin, manager of the department, held meetings with the traffic managers of the various factories in and near Indianapolis, Detroit, Chicago and Cleveland. In each place a permanent committee was formed, which committee will hold meetings at regular intervals to discuss traffic details and take suitable action in relation thereto. It is expected that uniformity of opinion and closer co-operation between the factories and the traffic department will result and that a great deal of benefit will be derived therefrom. Further meetings of these committees were held last week. In due course the traffic managers of Eastern factories will be similarly organized.

The annual meeting of the association will take place on Wednesday, January 20, 1909, probably at the Victoria Hotel.

### CHALFANT NOW A. L. A. M. GENERAL MANAGER.

E. P. Chalfant is now the general manager of the Association of Licensed Automobile Manufacturers, he having been selected at the meeting of its board of managers held December 3. Mr. Chalfant for several months past has been acting as assistant general manager, and he succeeds M. J. Budlong, whose duties as manager of the New York branch of the Packard Motor Car Company prevented his continuance.

These were present at the meeting: Elmer Apperson, Apperson Bros. Auto Company; John S. Clarke, Autocar Company; W. C. Leland, Cadillac Motor Car Company; Roy D. Chapin and Lee Counselman, Chalmers-Detroit Motor Company; M. S. Hart, Corbin Motor Vehicle Corporation; J. H. Becker, Elmore Manufacturing Company; Wm. E. Metzger, Everitt-Metzger-Flanders Company; H. H. Franklin and G. H. Stillwell, H. H. Franklin Manufacturing Company; E. R. Hewitt, Hewitt Motor Company; A. N. Mayo, Knox Automobile Company; S. T. Davis, Jr., Locomobile Company of America; H. A. Lozier, Lozier Motor Company; C. W. Matheson, Matheson Motor Car Company; L. H. Kittredge, Peerless Motor Car Company; A. L. Pope, Pope Manufacturing Company; George Pope, Pope Motor Car Company; George J. Dunham, Royal Motor Car Company; G. E. Mitchell, Alden Sampson Manufacturing Company; R. H. Salmons, Selden Motor Vehicle Company; I. H. Page, Stevens-Duryea Company; E. S. Church, Waltham Manufacturing Company; Thomas Henderson, Winton Motor Carriage Company.

The above includes George J. Dunham, the new president of the reorganized Royal Motor Car Company, of Cleveland, O., which hereafter will be known as the Royal Tourist Car Company. Very recently the Ohio courts relieved the Royal company of its receivership.

### DUNHAM HEADS ROYAL TOURIST CAR CO.

CLEVELAND, Dec. 7.—Free at last of the receiver, the Royal car is once more being made by an unencumbered company. The Royal Tourist Car Co., which succeeded the receiver, is now embarking upon an aggressive campaign, and appearances point to a successful season.

George J. Dunham, formerly the Royal and Corbin agent in Boston, is the president of the new company and will remain in this city in charge of the active management of the new concern. He has created a very good impression locally.

When taking up the duties Mr. Dunham expressed confidence in the new high water mark to be made in Royal Tourist progression. "Capital and experience will go hand in hand in future so far as our company is concerned," he said. "We start our fiscal year without a dollar of indebtedness and we are amply prepared for an aggressive campaign along lines of solid business merit."

"In many respects our new model, several of which have been completed and will very shortly be in the hands of our agents, embraces improvements and up-to-date refinements that stamp it as being in a distinct class. A larger motor with extra fuel saving carbureter, a change in transmission, a simplified rear axle, improved brakes and greater accessibility are noticeable features which we have striven for and the motoring public will soon have an opportunity to judge for itself as to the true quality of our product."

"Our factory facilities and general equipment in so far as the literal manufacturing of cars is concerned are unexcelled, and with the returning wave of confident prosperity to the country as a whole, my best efforts will go forth in the endeavor to place the Royal Tourist in a position of unassailable supremacy."

### PHILADELPHIA TRADESMEN ELECT OFFICERS.

PHILADELPHIA, Dec. 7.—The annual meeting and election of the Philadelphia Automobile Trade Association was held last week at its offices in the Odd Fellows' Temple, a surprisingly large proportion of the membership being present. The report of Secretary J. Henry Beck showed 31 active and 14 associate members now on the roll, the former being automobile branch house managers and agents, the latter tire and accessories dealers. A loss of five members during the year was more than offset by the addition of twelve new members. The treasury was shown to be in a comfortable condition, a neat balance being reported. The prospects for the next show seemed to indicate that it would be the "best ever" in the history of the association.

The election resulted in the choice of the following officers to serve during the ensuing year: President, J. A. Wister, of Gawthrop & Wister (Elmore); vice-president, E. C. Vanderhoof, of Bergdoll Motor Car Company (Benz, American Locomotive, Chalmers-Detroit, and Oakland); secretary-treasurer, W. J. Foss, of the Foss-Hughes Company (Pierce and E-M-F "30"); the foregoing with A. E. Maltby, of the Winton Motor Carriage Company, and Louis Block, of the Ford Motor Company, to constitute the Board of Directors.

A luncheon was served after the meeting.

### ACTIVITY IN IMPORTATION OF AUTOMOBILES.

For the ten months of 1908, ending November 1, the report of the importation of automobiles is as follows:

United Kingdom .....	\$141,553
France .....	1,453,930
Germany .....	54,595
Italy .....	453,638
Other countries .....	45,651

Parts of automobiles .....	\$2,636,867
Grand total .....	505,818

For the ten months of 1908, ending November 1, the report of the importation of steel is as follows:

Bar stock .....	\$35,394,019
Shapes and forgings .....	4,425,325
Total .....	\$39,819,344





1906 Franklin, U. S. Army, Mariano, Cuba.—Used by Army of Cuban Pacification.

**Prefers Auto to Horse.**—To-day in Cuba the United States has an army of pacification, and its commanding officer, although able to stand the riding test required by President Roosevelt, finds that the horse as a means of army transportation is almost as much out of place in the twentieth century as is the sword as a fighting weapon. Accordingly, it is in an automobile that he shoots about the island which only ten years ago was the stage setting for Colonel Roosevelt and his Rough Riders, with all their trappings of horsemanship. In a Franklin motor car he makes quick trips across and about the island, the car's speed making it a Government time saver. Since it has been attached to the headquarters of the army of pacification the automobile has covered 30,000 miles.

**Another Triumph for Locomobile.**—Among the cities which are rapidly replacing the horse may be noted the place that Pabst made famous, Milwaukee. This hustling municipality has just added one to its list of cars, making six. More than this, the latest rumor is that the present fire engines will be replaced by motor-propelled apparatus. Milwaukee's latest addition is a special police car. The list now reads like this: Fire chief, Mitchell car; Board of School Directors, Rambler; Police Department, Meiselbach truck patrol wagon body; Chief of Police Department, Locomobile. The Board of Public Works is about to choose a car, while other departments also have cars. The success of these cars induced the Common Council to appropriate \$4,600 for the police car. Chief Janssen used his influence in this direction to secure a Locomobile. In making this selection he was influenced by a car of this make winning each of the 24-hour contests held in Milwaukee, the first with 1,149 miles in 1907, and the second with 992 miles in 1908.

**A British Compliment to the Locomobile.**—In a racing chapter, English *Motor* prints the following: "The Vanderbilt Cup race was run this year under a weight limit, disregarding the Ostend regulations, and consequently will probably be the last road race in which the old big-engine racers were used. The fourth contest for the Cup was won by Robertson, driving a Locomobile, which

had been built for the last Cup race. They were beautiful cars, and their workmanship excited the admiration of even the foreign drivers, so that the Locomobile Company are to be congratulated on their success at the eleventh hour, when their cars were practically useless for international racing."

**Thomas Gets the Standard Cup.**—The beautiful silver trophy put up by the Standard Roller Bearing Company, of Philadelphia, for the car with its bearings which made the best performance in the recent Vanderbilt Cup race, has been awarded to George S. Salzman, for his consistent handling of the 115-horsepower Thomas. This recognition of Salzman's ability as a driver came as a surprise both to the Thomas people and the driver himself. That his driving was consistent is shown plainly by the times for the ten laps, which varied but little up or down from 22:40 each.

**Louisville Dealers Organize.**—For the purpose of formulating some definite plans for the second annual automobile show next Spring, the automobile dealers of Louisville have formed the Louisville Automobile Dealers' Association, which will be incorporated under the laws of Kentucky. Although the association was first conceived to make the proposed show a success, it will continue to interest itself in all automobile doings and particularly the welfare of the trade.

**Long Trip for Two-Cylinder.**—Dr. E. E. Brown, of Fort Bragg, Cal., recently completed a long-distance trip with his two-cylinder Rambler, passing through eleven States and a good bit of Canada. Starting from Fort Bragg, he spent two months on the road to Winnipeg, covering in all 3,123 miles. The only trouble reported during the trip was the loss of the mud apron from beneath the car and the cut-out whistle, which happened in the sage-brush of Nevada.

**Noted Author Now a Pierceite.**—Robert W. Chambers, the novelist, has just purchased a four-cylinder 40-horsepower Pierce-Arrow car with a suburban body. With the possibilities for stories that may be suggested to Mr. Chambers by the use of his car it should not be regarded as at all unlikely that within the next few years some critic may feel

called upon to indite a monograph on "The Influence of the Pierce-Arrow on American Literature."

**"Old Glory Team 1908."**—The Peerless Motor Car Company, of Cleveland, O., is issuing a neat little booklet entitled "Old Glory Team 1908," which tells briefly of the performance of the now famous red, white, and blue team in the Glidden tour. This is copiously illustrated by views taken all along the route, beginning with the start at Buffalo to the finish at Saratoga.

**Correction in Oakland Advertising.**—In the November 26 issue the advertisement of the Oakland car, on page 94, erroneously stated that the four-cylinder model would be equipped with 32-inch wheels. This was not fair to the makers of this light car, who are putting on very large wheels, 34 inches in diameter, with 34 by 4 inch tires all around.

**Peerless to Build in New York.**—The Peerless Motor Car Company makes the announcement that it has purchased property on Broadway, where it will erect a permanent home for the New York branch. The building will extend back far enough to make a right angle coming out on Fifty-seventh street.

**Cost of Model D Franklin.**—Attention is called to the fact that the price of the 1908 Model D Franklin touring car, as given in the advertisement in November 19 issue, was a typographical error. The figures given, viz., \$2,700, should have been \$2,800.

**Both Winners Used Same Shock Absorbers.**—In the big and little car races at Savannah the two winners were equipped with Truffault-Hartford shock absorbers. Incidentally, the first four cars in the Grand Prize were similarly equipped.

**Burdick Motor Car Company.**—The American Motor Car Company, of Eau Claire, Wis., has filed an application changing the name to the Burdick Motor Car Company and changing the number of directors from five to three.

#### PERSONAL TRADE MENTION.

● **Patrick J. Brophy** was the winner of the second Chauffeurs' Economy contest, promoted by the Brazier Auto Garage, of Philadelphia. He wins a handsome gold watch for his record showing the smallest fuel consumption, repair bills and general upkeep of nearly a score of contestants.

**C. Royce Hough**, the former factory manager of the Pope Manufacturing Company's plant at Indianapolis, and later of the Motor Car Company, Washington, D. C., has accepted the position of general manager for Fickling & Company, of New York.

**Herbert Harold**, formerly of the Locomobile factory force, has taken charge of the mechanical department of the Schreiber Motor Company, Milwaukee, Wis. He succeeds "Bob" Drach, who piloted the "Locos" to victory in two 24-hour races at Milwaukee.

**"Jack" Harkins**, the driver of the Chadwick entry in the recent Founders' Day 200-mile race in Fairmount Park, Philadelphia, is now selling goods for the Harris Fire and Rubber Company, Broad and Race streets, in the same city.

**R. J. Skilton**, recently connected with the Philadelphia branch of the Chadwick Engineering Works, of Pottstown, Pa., was last week introduced into his new position as city sales manager of the Oldsmobile branch in the Quaker City.

**E. P. De Gollier**, who has been connected with the Cleveland branch of the Oldsmobile Company for some years, has allied himself with the Auto Shop Company, Cleveland agents for the Thomas and Selden cars.

**R. V. Connerat**, of Savannah, Ga., has been appointed general manager for the Buick territory in the South, with headquarters at Atlanta, W. H. Connerat, Jr., managing the Savannah business.

**Alex. T. Segura**, well known in theatrical and automobile trade circles, has allied himself with the Astor Automobile Company, New York City, as manager of the sales department.

**S. J. Wise**, late of the Packard and Garford selling forces, has gone with Carl H. Page & Company, New York City, Eastern selling agents for the Chalmers-Detroit.

**Dave Henry** is now the sales manager of the Interstate Automobile Company, of Muncie, Ind., which is not located in Chicago, as was previously stated in these columns.

**Albert A. Lamb**, formerly of the Michelin branch in Philadelphia, has been appointed general manager of the James S. Griffin Company, New York City.

**D. W. Gluck**, late of the Packard Motor Car Company, of New York, has been appointed sales manager for Fickling & Company, New York.

**S. R. Iams**, until recently agent for the Royal Tourist in Western Pennsylvania, is now with the Winton branch on Beatty street, Pittsburg.

#### RECENT INCORPORATIONS.

**The Bertschy Motor Company**, of Council Bluffs, Ia., has been incorporated with capital stock of \$50,000 for the purpose of manufacturing automobiles. Work has already started on a factory at Sixth street and Eleventh avenue. The officers of the company are: President, T. R. Children; vice-president and general manager, A. J. P. Bertschy; secretary, G. S. Wright; treasurer, E. E. Hard.

**Gloversville Garage Company**, of Gloversville, N. Y., has been incorporated by W. D. Hyde, Morrell Voorman and J. W. Sisson, with a capital stock of \$15,000. The company has options on three different sites for the building of a garage during the winter.

**Brick Church Automobile Company**, of East Orange, N. J., has been incorporated with capital stock of \$100,000 to manufacture and repair automobiles.

**Post Motor Company**, New York, has been incorporated with capital stock of \$30,000 for the purpose of manufacturing automobile engines, etc.

**Cameron Motor Car Company**, New York, with capital of \$150,000. Incorporators: E. D. Alexander, R. R. Logan and Frank Hildebrandt.

**Weldon & Bauer Company**, Newark, N. J., has been incorporated with capital stock of \$15,000, for the purpose of carrying on a garage.

**Lozier Manufacturing Company**, of Plattsburg, N. Y., has filed articles of incorporation with capital stock of \$60,000.

**Electric Speedometer and Dynamotor Mfg. Co.**, of Delaware, has been incorporated with capital stock of \$50,000.

**Long Beach Garage Company**, New York, has been incorporated with capital stock of \$50,000.

#### CONCERNING THE AGENCIES.

**Franklin Agency Appointments.**—The H. H. Franklin Company, of Syracuse, announces the following agencies: Robert Gugin, British Columbia; Wallace L. Wilcox, Fall River, Mass.; S. C. Low Supply Company, 22 Fourth street, New Bedford, Mass.; Mack-Brooks Company, 124 West Market street, Lima, O.; Orange Auto Garage, East Orange, N. J.; Alexander-Seewald Company, Atlanta, Ga.; Charles Bilz, Colorado Springs, Colo.; H. E. Hartman, Nashua, N. H.; Inland Automobile Company, Spokane street, Walla Walla, Wash.; O. C. Bosworth, Putnam, Conn.

**Oldsmobile, New Jersey.**—The Oldsmobile Company, of New York City, has completed arrangements whereby it secures the territory in Northern New Jersey, and has at once started to open branches in the various counties. The New Jersey headquarters will probably be established at Newark.

**Cadillac, Winston-Salem, N. C.**—The Forsyth Sporting Goods Company, agents for the Cadillac in Winston-Salem and vicinity, has leased the new building on Liberty street for the automobile department of its business, which has been placed in the charge of G. C. Thomas.

**Auto-Gas Tanks, Philadelphia.**—James L. Gibney & Son, Broad street, Philadelphia, have taken the agency for the Auto-Gas tanks made by the Avery Portable Lighting Company of Milwaukee.

**Fisk Tires, San Francisco.**—Pacific Coast manager for the Fisk Rubber Company, G. E. Ichinson, sends the news that the San Francisco branch has moved into its new quarters at Golden Gate avenue and Larkin street.

**Locomobile, Pittsburg.**—I. N. Dill, manager for the Central Pennsylvania Automobile Company, of Pittsburg, announces that his company has taken the agency for the Locomobile.

**Maxwell, Baltimore.**—The Lambert Automobile Company, of Baltimore, agent for the Maxwell cars, has moved from Roland Park to Chase street, near Charles.

**Overland, Baltimore.**—Charles S. Houghton has taken the agency for the Overland car in Baltimore and vicinity, with headquarters at 329 Calvert Building.

**Corbin, Lexington, Ky.**—Joseph Matson, for the Corbin Motor Car Company, has established an agency in Lexington, Ky., with Smith, Watkins & Company.

**Lozier, Baltimore.**—The Lozier will be represented in Baltimore by the Southern Auto Company, Mount Royal avenue and Dolphin street.

**E-M-F, Baltimore.**—The agency for the E-M-F in Baltimore has been taken by the Motor Car Company, Maryland and Mount Royal avenues.

**Brush, Cleveland.**—The Brush car will be handled in Cleveland by Harry S. Moore, who also has the agency for the Stoddard-Dayton cars.

**Regal, Nashville.**—J. O. Caldwell has established the Regal Motor Company in Nashville and will have salesrooms at 145 Third avenue.

**Moon, Kansas City, Mo.**—The Moon Car Company has been formed in Kansas City, with Charles B. Merrill as manager.

**Apperson, Seattle.**—The Apperson cars will be handled in Seattle by the Seattle Auto Company.

#### NEW TRADE PUBLICATIONS.

**Matthews Boat Company.**—In an extensive catalogue of over 70 very artistic pages, the Matthews Boat Company, of Port Clinton, O., has gone into the subject in a way that is new and original. Beginning with the statement that a reader and prospective buyer's interest is usually limited to three questions: "Who we are, What we have to offer, and What is the cost," they have answered these questions very fully. The second part, or "What we have to offer," of course, takes up the greater portion of the book, giving as it does photos of the three principal classes of boats built by them. These are open launches, runabouts, including racing boats, and cabin cruisers. The merits of the type of construction are shown by means of sketches, which bring out clearly the points of superiority. In the back a collection of letters from satisfied owners all over the country testify to the fact that Matthews boats are making good. An excellent picture of the launching and christening of a small cabin cruiser occupies a prominent place on the front cover.

**Peerless Motor Car Company.**—The Peerless catalogue for 1909 is issued in two parts, the general catalogue and the limousine book. The latter is devoted to the enclosed cars with photos showing the refinements found on the Peerless cars, together with wash drawings indicating the many and varied uses to which the limousine may be put. The general catalogue, copiously illustrated with photos of the various units, including engine, transmission, transmission parts, etc., shows that this company will produce but two chassis for the coming year, viz., the four-cylinder, nominally rated at 30-horsepower, and the "six" called 50-horsepower. From the details, it will be noted that very few changes have been made. The wheelbase is increased to distribute the weight better; a new universal joint between clutch and transmission, and a new herringbone gear for the water pump are the only differences to be found.

**Edmund & Jones Mfg. Co., Detroit, Mich.**—The new circular of this year's oil side and tail lamps shows that the company is still working towards simplicity. The lamps are riveted together, no screws being used, thus they are easy to keep clean. The best ground magnifying mirrors are used in the searchlights, which are made in two types and six different models. They vary in size and price from Model 365, 8-inch diameter, at \$8 up to Model 3880, 10 1/4-inch, at \$18.50. A brand new feature is the condensation cup. This is to collect the condensed water in the gas line from generator to lamp. Three wood screws fasten this simple little trouble saver to the under side of the running board.

**American Simplex.**—Among the advocates of the two-cycle automobile engine is numbered the Simplex Motor Car Company, of Mishawaka, Ind. A brand new catalogue of these cars shows the single model to be produced for 1909 equipped with four different bodies, touring, close-coupled, roadster, and limousine. The details of the mechanism are given with an exposition of the two-cycle principle and some very convincing pictures of a trip made by Col. C. G. Conn, of Elkhart, Ind., from the factory to Los Angeles, in one of their stock cars.

**White Steam Ambulances, etc.**—Owing to the importance that commercial work has assumed where the White steamer is concerned, the company has just issued a folder illustrating some of the numerous ambulances, patrol wagons and busses that it has produced within the last year or so. These include the equipment of many well-known hospitals and municipalities besides the Army and Navy.

**Gelzler Storage Battery.**—The Gelzler Brothers, of 514 West Fifty-seventh street, New York City, have just issued their catalog announcement for 1909 which contains a description of the non-sulphating battery manufactured by them with especial reference to its use in connection with the ignition systems for all gas or gasoline engines.

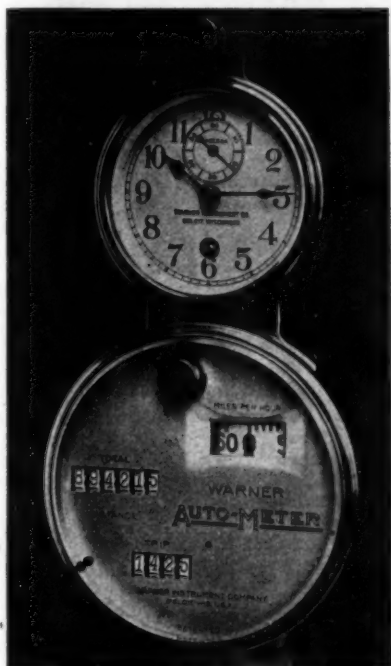
**Winton Motor Carriage Company.**—This veteran concern has just issued its 1909 catalogue, which is published with 48 pages enclosed in an artistically designed cover with "straight-from-the-shoulder" talk on what at least one company thinks of the six-cylinder engine, besides the complete specifications for the 1909 product.

**Multiple Spindle Drills.**—The Pratt & Whitney Company, Hartford, Conn., manufacturers of small machine tools, are sending out a beautifully illustrated pamphlet showing some of the many different types of multiple drills they manufacture, many of which are especially adapted to the needs of automobile work.



## INFORMATION FOR AUTO USERS.

**1909 Warner Auto-Meter.**—It has been the consistent policy of the Warner Instrument Company, of Beloit, Wis., not only to put out a refined and beautiful speed indicating instrument, but an instrument that is calculated to give the best satisfaction under all conditions. The 1909 Warner Auto-Meter, which will be ready for delivery about the middle of the present month, and which is shown in the accompanying illustration, retains the principle of the speed indicating part of the 1908 instrument, but includes among other notable changes and improvements a new odometer with 100,000-mile season and 1,000-mile trip registers, and simple trip reset device. Another notable improvement consists of a new shaft and a new drive. In the new in-



WARNER AUTO-METER AND CLOCK.

strument the shaft will make one-half the number of revolutions of the old one.

In addition to the model shown in the cut, which is surmounted by the Warner Auto-Clock, another model, identical in design, but without the clock, is furnished. Each instrument will have an enclosed electric light, a valuable adjunct to the autoist after dusk.

As to the quality of the speed and distance recording instruments manufactured by the Warner Instrument Company, it is but fair to state that their construction is second to none. As an effective antidote to friction and wear, and to insure that every variation in the speed of the car, however minute, will be faithfully indicated on the speed dial, the dial rides in genuine sapphire jewel bearings. All driving parts are made of the best possible material, with absolute accuracy and longevity of wear as the chief ends in view. The new factory of the Warner Company is in keeping with the requirements of the high-class product it produces, its equipment throughout being of the highest efficiency.

**Yemco Quick Acting Ball Bearing Wrench.**—Smith & Hemenway, 108-110 Duane street, New York City, are offer-

ing to the trade a quick acting ball bearing type of monkey wrench, the especial feature of which will be understood by attaching the appellation "self-locking." The illustration here afforded will clearly show the details of interest, and the average mechanic will guess the rest. At

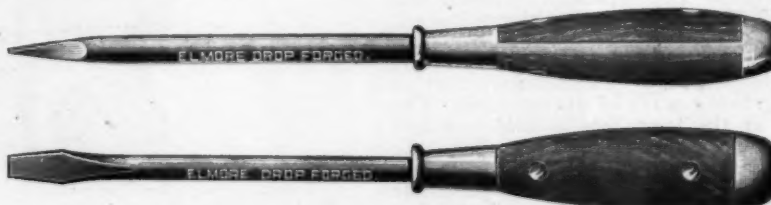


YEMCO QUICK-ACTING WRENCH.

all events, this self-locking idea is one to be appreciated, especially by autoists who experience trouble in keeping monkey wrench jaws adjusted, after a little lost motion creeps into the mechanism. The wrench is of convenient size, die forged of fine steel, and machined to a nicety. The "nickel" finish renders the wrench a fitting companion in the up-to-date tool kit.

**An Auto Duster That Absorbs Dust.**—Sometimes it is the little things which go to make the maintenance of the car easy, and one of these conveniences has just been placed on the market by the Howard Duster Company, 164 Federal street, Boston, in the shape of a dustless duster, made of chemically treated cloth, which the makers assert not only removes the dust, but absorbs it, thus eliminating the dust particles which arise in the air, from being stirred up by the wiping, and action of the cloth. Not only will the Howard duster do the dusting, but it is useful for cleaning and polishing without scratching the finish.

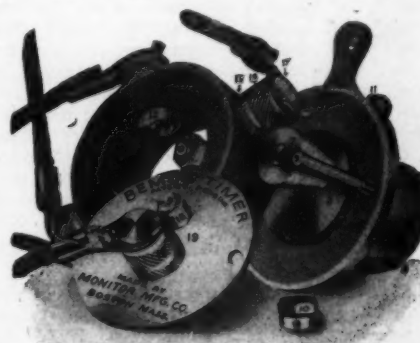
**Elmore Drop Forged Screwdrivers.**—With the view of meeting the demand, not only of the makers of automobiles throughout the country, but dealers, garages and supply houses who have now adopted one certain type and style of screwdriver as being standard, and the one proven satisfactory for such heavy work, the Elmore Tool Manufacturing Co., of Hartford, Conn., has after exhaustive tests and experiments designed and perfected a screwdriver known as the "Elmore Drop Forged" to meet these requirements. The wood parts of the handles of these drivers are of the ribbed protection style on all sides, thus avoiding cracks caused by shrinkage. The entire driver, handle, and ferrule is drop forged from the best quality of steel, and the style and design is shown in the illustrations. The end of the driver is made very heavy and flat on the extreme end for hammering, and other unusual work sometimes necessary on automobiles, and the butt and ferrule end is constructed so as to prevent cracking the wood scales when used for such severe work. These screw-



TWO TYPES OF THE ELMORE DROP FORGED SCREW DRIVERS.

drivers are made not only with different styles and lengths of blades, but are made in several sizes of handles, from very small to very large, and with both round and square shanks. The capacity of the company's plant will enable it to manufacture tools of such type for the automobile trade in very large quantities.

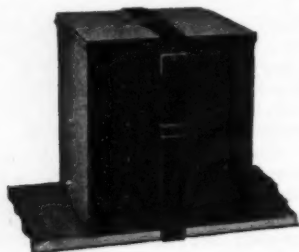
**New Form of Primary Contact Maker.**—The Monitor Manufacturing Company, of 1425 Washington street, Boston, Mass., has recently brought out an entirely new form of primary contact maker and is applying it to the already well known Bemus timer. By referring to the cut it will be noticed that a beveled roll is used for the primary brush. This roll is carried by a pin located off center relative to the axis, and designed to engage with steel balls. The boundaries of the balls touch on the beveled part of roll, causing the roll to turn on the pin and at the same time positively rotating the balls universally. This timer is supplied with a ground contact of special construction and designed so that the point of contact, which is a steel ball, will engage on the end of the roll. By this the best possi-



BEMUS TIMER DISSEMBLED.

ble form of contact is made and the ground circuit is complete, without the fear of oil insulated joints or connections. In explanation of this it will be noticed that the current is brought in through binding post No. 16 on to roll No. 7, thence to ground contact connection, which is connected to battery, engine, or frame, thus avoiding the necessity of the current being obliged to travel through an oil insulated bearing. More timers fail to work because the ground circuit is not completed than from any other cause. All of the ball contacts are easily removed and cheaply renewed, being standard 3-8 inch steel balls. They may be obtained almost anywhere and the roll or primary brush can also easily be renewed at an expense of twenty-five cents or less, making an expenditure of not more than forty cents on a four-cylinder timer. This form of contact has been thoroughly tested and the results obtained are commendable. The timer has been run equivalent to 35,000 miles without its being necessary to renew either the roll or balls.

**Dover Tourist Oil and Gasoline Kit.**—A neat, compact, and dust-proof device for carrying extra oil and gasoline when touring, that can be instantly attached or detached from the car, has just been placed on the market by the Dover Stamping & Manufacturing Company, of Cambridge, Mass. The illustrations show the form and relative size of the kit, which is 9 x 9 inches x 10 3-4 inches high, and consists of



TOURIST OIL AND GASOLINE KIT.

a black enameled steel case, which may be strapped instantly to the running board. It contains inside two enameled steel cans, having a capacity of over 11-2 gallons each, with special pouring spout and filler cap. One may be used for oil and the other for a reserve supply of gasoline, or both for oil, or one only may be used and the space occupied by the other be used for storage room. One special feature which the makers state ought to appeal to motorists is that it enables the tourist to carry a sufficient amount of his favorite brand of oil in a very convenient and compact form for quite an extended tour.

**Neverout Gas Generator.**—The illustration shows the Neverout patent air-cooled gas generator, made by the Rose Manufacturing Company, 910 Arch street, Philadelphia. Among the good things announced for this generator is a gas of intense whiteness and a flame that is perfectly steady, and as it employs the grate system with Neverout patent dome water feed, it is easy to clean, and can

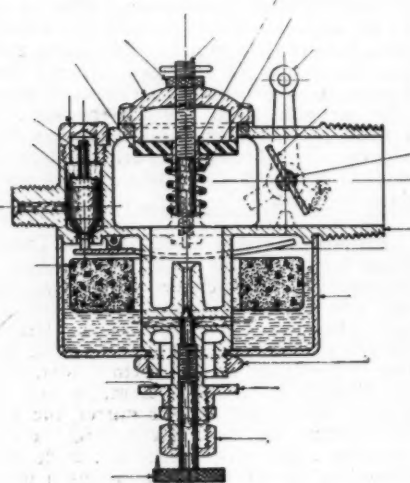


NEVEROUT GAS GENERATOR.

be instantly and repeatedly lighted and turned off likewise, and without complications. The generator is made in two sizes, holding 2 and 3 1/2 pounds of carbide respectively. The construction is strong, being made of drawn shells. The flame at the lamp jets is held constant because the generator supplies the requisite quantity of gas, free from impurities, at a constant pressure. The constant pressure is the product of a constant temperature of the dissolving

carbide, and a suitable means by which the lime is shaken out. Patents have also been taken out in the principal foreign countries.

**Oberdorfer Carbureter.**—As will be apparent from the sectional illustration showing the details of its construction, the Oberdorfer is an extremely compact and well designed example of the concentric float type of carbureter, this advantage having been obtained in great measure by placing the auxiliary air valve directly over the spray nozzle, or in the mixing chamber. The gasoline supply enters at the left, dropping into the float chamber through the loaded valve shown in the cut, while the mixture leaves at the right as is indicated by the position of the throttle. The Oberdorfer carbureter was primarily designed for marine use and has been largely em-

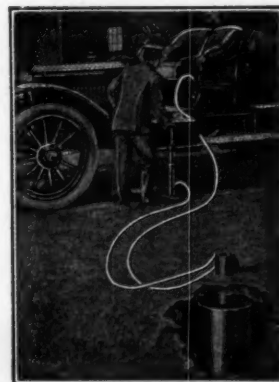


SECTION VIEW OBERDORFER CARBURETER.

ployed on motor boats, which accounts for the design of the auxiliary air valve housing, this being intended to prevent the entrance of water. It has also been used to some extent on the automobile and both in tests and actual service had shown a high degree of efficiency as well as reliability in action, making an unusually uniform mixture at all speeds. Easy starting is one of its advantages, as when the carbureter is primed, the button not being shown in the illustration, a few drops of gasoline are caught in the cup of the adjusting screw of the needle valve located in the center of the main air intake, this insuring a supply of gas without delay.

It is being manufactured by the M. L. Oberdorfer Brass Company, Syracuse, N. Y., and as this firm has been turning out several thousand carbureters a year for the last two or three years, for well-known automobile manufacturers, they have excellent facilities for this class of work.

**Air-Tight Steel Gasoline Tanks.**—The economy of buying gasoline in large quantities is well recognized, but many automobilists are prevented from doing so by the trouble and danger of storing it in ordinary ways. The Air-Tight Steel Tank Company, of Pittsburg, Pa., has brought out a storage

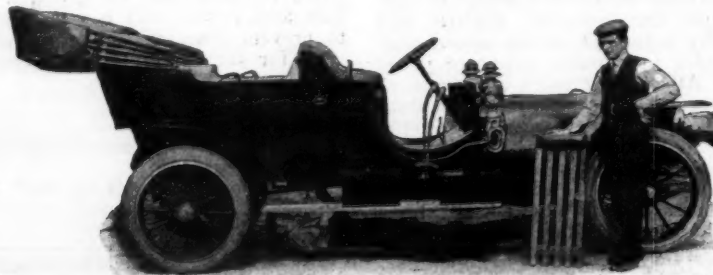


AIR-TIGHT STEEL TANK IN USE.

tank especially designed for use by private automobile owners. The tank is simply buried in the ground in any convenient place, and the gasoline is forced out by air pressure instead of by a suction pump. The flow is always under perfect control. When sufficient has been drawn out, opening a valve on the air pump releases the pressure and allows the gasoline in the piping to flow back into the tank, where it is hermetically sealed.

**New Model of Jones Speedometers.**—The Jones Speedometer, Seventy-sixth street and Broadway, New York City, has placed upon the market four new models in order to meet the demand for a speedometer commensurate in price with cars of medium cost. For example, one can now purchase a Jones speedometer with a 50-mile speed scale for \$15. This model brings a speed indicator of well-known quality within the reach of every autoist. Model 22 has Veeder season odometer 50-mile speed scale, and costs \$5 more than Model 30. Model 27 indicates speed to 50 miles per hour and records season mileage with Jones enclosed odometer. Model 28 has the Jones trip odometer with its feature of recording cumulative mileage.

**Improved Chauffeur's Truck.**—The Grand Rapids Spring Company, of Grand Rapids, Mich., have just put on the market a small truck to be used by drivers and repairmen in general for getting at the under side of the car without coming in contact with the oily floor or the dirt. As shown by the accompanying cut the device is not bulky and may be easily handled.



IMPROVED CHAUFFEUR'S TRUCK FOR GETTING UNDER A CAR.